The Spiders of New Zealand

PART V

CYCLOCTENIDAE, GNAPHOSIDAE, CLUBIONIDAE.

by R. R. Forster

LINYPHIIDAE—MYNOGLENINAE.

by A. D. Blest

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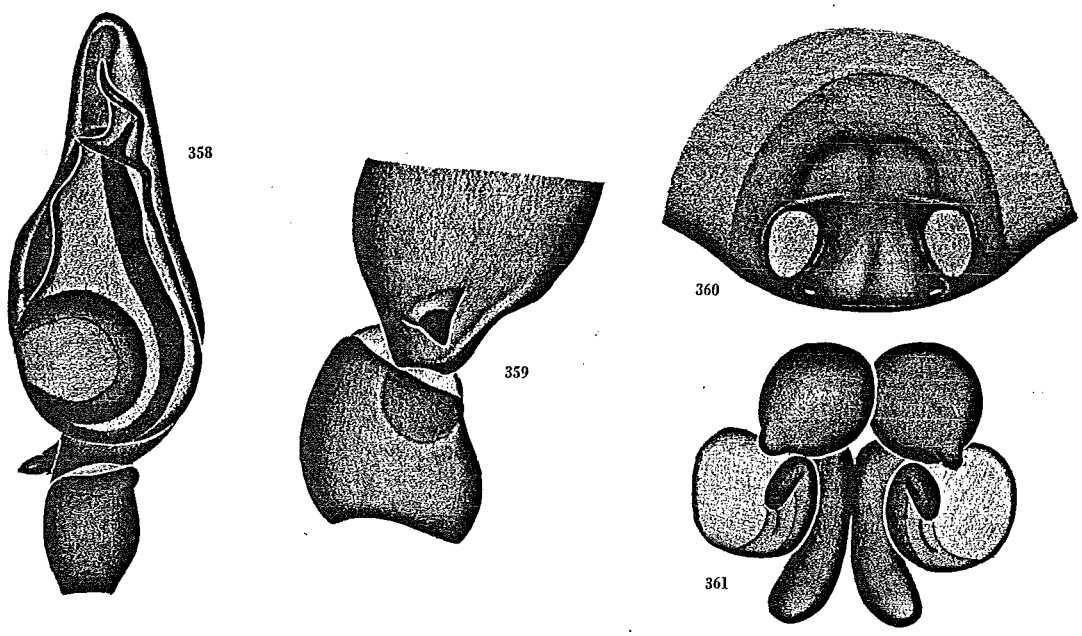


Figs. 358-361 *Supunna picta* Fig. 358 Male palp, ventral view Fig. 359 Prolateral surace of tibia and base of cymbium of male palp showing cymbila thorn and excavated portion of the tibia Fig. 360 Epigynum Fig. 361 Internal genitalia from above

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	2.6	1.1	2.2	2.4	1.3	9.6
2	2.6	1.1	1.9	2.3	1.4	9.3
3	2.5	1.2	1.8	2.5	1.2	9.2
4	3.4	1.3	2.8	3.9	1.6	13.0
Palp	0.9	0.4	0.4		1.5	3.6

Similar in appearance to the female. The palp is shown in Figs. 358, 359. The tibia lacks a process but there is an excavated distal region associated with a stout spinous process on the basal retromargin of the cymbium. Bulb simplified with a short distal embolus. There is no conductor, the function being taken over by the tip of cymbium.

Records North Island. Auckland. Auckland, 6.xi.41, D. Spiller. Cuvier Island, v.43, R.R.F. Mount Maunganui, in house, 2.v.73, H. S. Taylor, Whale Island, 27.viii.70, Auckland University Field Club. Ohope Beach, 27.iv.66, J.H. Te Kaha, on rocks, 2.x.69, C.L.W. Hawkes Bay. Port Ahuriri, 14.i.66, R.W.H. South Island. Marlborough. Parikawa, Woodbank Stream, 16-25.iii.69, R.R.F., C.L.W. Mount Fyffe, *Velascum*, 30.vi.74, A.D.B. Canterbury. Christchurch, iii.70. Christchurch, on ground, 9.vi.74, T. Trought. New Brighton, 15.iii.73, R. Hamilton. Rangiora, 15.v.75, W. J. F. Hamilton. Lincoln, in house, 18.vii.74, K. G. Somerfield.

There is no doubt that this spider is a comparatively recent immigrant from Australia. The earliest record is by Dr. D. Spiller who found a female in Auckland in 1941 and a male which I collected on Cuvier Island in 1943. The species has apparently been established in the Auckland area for a considerable time but the South Island records are all recent. The spider has only become common in Christchurch over the last three years. It will be interesting to see how far south it will spread.

In Australia this spider and its relatives are common in sclerophyl forest and open country. Most of the records from this country have been in gardens and around houses but some have been seen in open country where the grass cover is short.

LINYPHIIDAE-MYNOGLENINAE

by A. D. Blest*

The Linyphiidae comprise a very large family of spiders which is quite well understood in the northern hemisphere, but whose antipodean representatives have scarcely been examined. They present few useful taxonomic characters other than the genitalia either for diagnosis or for generic delimitation, and the internal classification of the family has for long been a matter of controversy. Northern Hemisphere forms were split into two families by Bertkau (1872): Linyphiidae and Micryphantidae. Gerhardt (1923) recognised the same division, calling the latter family Erigonidae, and Locket and Millidge (1953) have argued in favour of this procedure while considering that the taxa are, in fact, a continuum whose two major groupings deserve no more than subfamily status. The two subfamilies then become the Linyphiinae and Erigoninae, and this usage will be followed here.

Blest (1976) extended the observations of earlier workers on the tracheal anatomy of the Linyphiidae by surveying 121 species. It was confirmed that erigonine species have two stout tracheal trunks which arise from a common spiracular atrium and branch within the abdomen into two tight bundles of tracheoles which pass through the pedicel and invade the prosoma, where they disperse without

* Zoology Department, University of Canterbury, Christchurch, N.Z. Present address Research School of Biological Sciences, The Australian National University, Canberra, Australia 2600.

further subdivision. Linyphiine species have four slender tracheae confined to the abdomen, in all but one case (*Allomengea* Strand 1912) without branches. However, (i) A small number of species possess anomalous tracheal systems; (ii) All Erigoninae have two very small tracheae arising laterally with respect to the two main trunks from the spiracular atrium; (iii) Several genera proved to have been mis-assigned on the basis of chaetotaxy and of ambiguous palpal characters; these were all small spiders, reduction of whose leg spines and simplification of whose palpal organs had led them to be placed in the Erigoninae, their possession of typical linyphiine tracheal systems not having been appreciated. If it is accepted that all characters other than tracheation are, in fact, highly modifiable, then the tracheal systems become the only characters which may be used to divide the family. It was argued that the anomalous tracheal patterns whose origins are not understood make the erection of two full families strategically questionable; it may be added that the impossibility of assigning a unique type to a family without destroying it creates practical difficulties in the case of a group loaded with monotypic genera many of which are known only from single type specimens or very small series.

Millidge (1977) has recently suggested that a division even at sub-family level is both artificial and unworkable, and this view has much to recommend it. The retention of two sub-families and the erection of a third in the arrangement offered below is proposed more in the interest of immediate convenience than from strong conviction that it is correct in any absolute sense.

Here, the Linyphiidae will be treated as composed of three subfamilies: Erigoninae, Linyphiinae, and Mynogleninae, which is the subject of this section. The definition of the Linyphiidae is then as follows:

LINYPHIIDAE

Ecribellate spiders. Eyes in two transverse rows. Chelicerae with teeth on inner and outer margins, and with lateral stridulatory files. Labium rebordered. Male palp with paracymbium, cymbium large with well-defined alveolus. Palpal organs with suprategulum (= median apophysis (Merrett, 1963) (Saaristo, 1971)) fused to tegulum, embolic division which may be simple or complex articulated to tegular complex by duct membrane. Female palp with or without claw. Legs with simple but variable basic spination, all hairs simple, trichobothria present on tibiae, a single dorsal trichobothrium present on metatarsi (occasionally lost). Tarsi with three claws, without accessory claws or scopulae. Vulva with or without scape, of variable external form, with paired receptacula and accessory glands. Abdomen either without pattern, or with a pattern derived from a simple dorsal folium. Tracheae arising from a single spiracular atrium, composed of four trunks variably disposed.

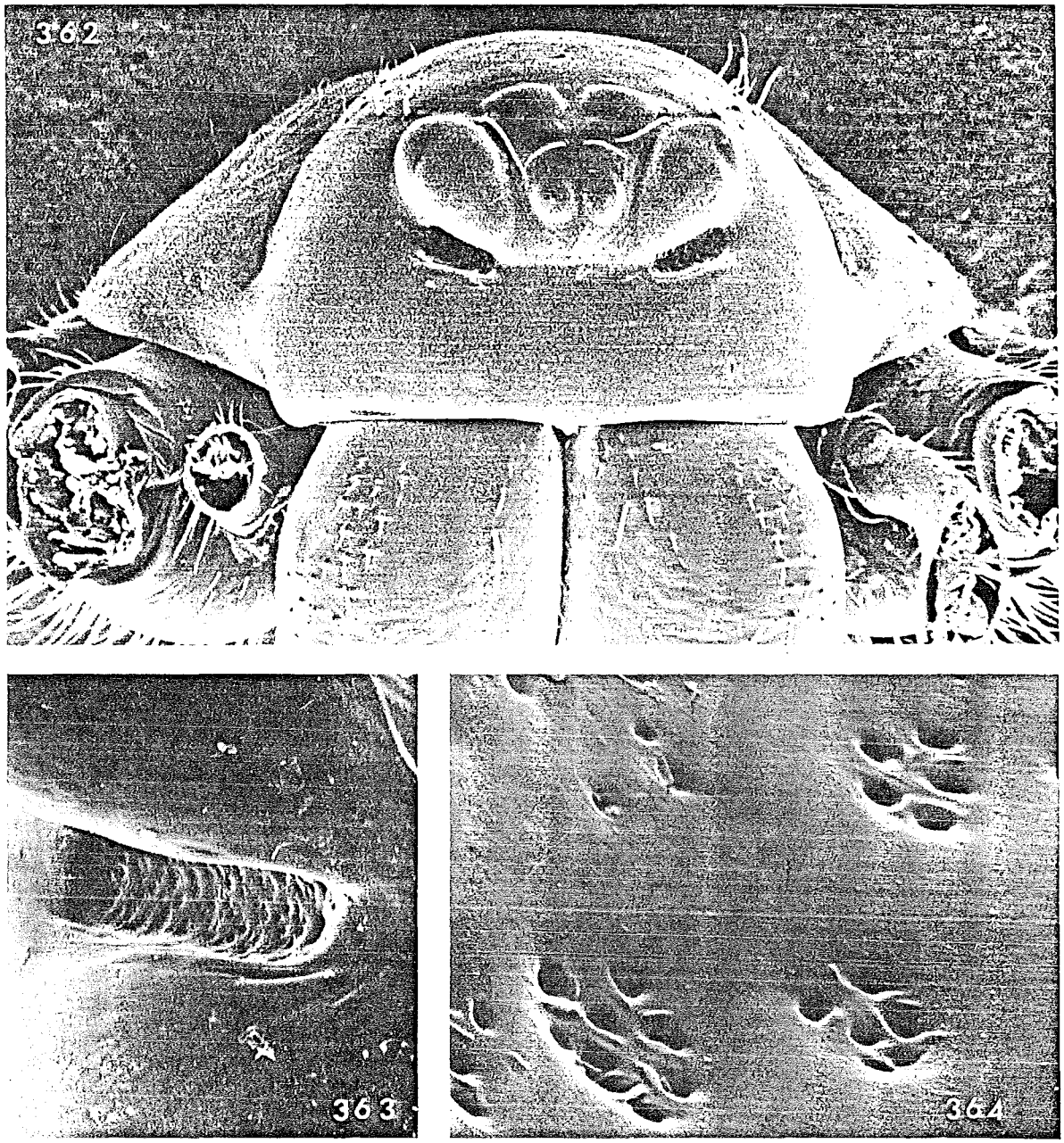
Other characters which distinguish the Linyphiinae and Erigoninae will be discussed when we come to consider the phylogenetic position of the Mynogleninae. It is believed (Vol. I) that there are no endemic Erigoninae in Australia or New Zealand, and all members of the subfamily so far collected are either common members of remote faunas from which they have been introduced, or sufficiently close to familar genera elsewhere as to suggest that they, too, have an exotic origin. Linyphiinae, on the other hand, are abundantly represented by forms generically unique to the region (Van Helsdingen, 1972), although few have been described; despite their distinctive and specialised genitalia, they possess simple linyphiine tracheal systems.

The species considered here present a special problem. They are a homogeneous group of spiders which are all similar in appearance, and which are characterised by the possession of subocular sulci (Fig. 362-364) supplied by clypeal glands beneath the lateral eyes (Blest and Taylor, 1977). Unlike the analogous sulci of many male Erigoninae, they are present in both sexes, are directed forwards instead of laterally, and are not gripped by the chelicerae of either partner during copulation (Blest and Pomeroy, 1978). The male palpal organs are of uniformly simple construction, resembling those of linyphiine and erigonine spiders in which they have been simplified by secondary reduction, but it will be seen that secondary reduction is not a satisfactory explanation of the mynoglenine state. A plan of the basic linyphiid palpal organ is shown in Fig. 365 modified from Merrett (1963) and Van Helsdingen (1969). An equivalent diagram for the Mynogleninae is given in Fig. 366. The suprategulum is fused with the tegulum, the latter being connected to the embolic division by a duct membrane which is elaborated to form a conductor. The embolic division consists of an embolus continuous with and fused to a poorly-defined radical component. The lamella, terminal apophysis and embolic membrane are all absent, and there are no accessory processes derived from the tegulum. Despite the superficially erigonine character of the palpal organs, the vulvae are often provided with strong scapes, and the tracheal systems are of the normal linyphiine type. Mynoglenine sexual behaviour shows some erigonine features as well as components which appear specialised and unusual (Blest and Pomeroy, 1978).

Subfamily **MYNOGLENINAE** Lehtinen 1967

Linyphiidae with subocular sulci and clypeal glands in both sexes beneath lateral eyes, the latter sharing an obtuse tubercle. Chelicerae with an anterior row of strong teeth, and a posterior row of very weak teeth. Tracheal system consisting of four simple tracheae arising from a common spiracular atrium, confined without branching to the abdomen. Palpal organs simple; embolic division without lamella, terminal apophysis or embolic membrane, radix represented by a small radical component continuous with embolus and barely distinguishable from it. Tegulum without accessory membranous processes. Vulva with or without scape. Chaetotaxy variable, but almost all species with apical spines on posterior tibiae, and sometimes on the metatarsi, and all legs provided with numerous fine erect hairs. An abdominal pattern usually present.

Species of the subfamily were first collected and described by Urquhart (1886, 1888, 1894) under *Linyphia* Latreille. Simon (1905) described *Mynoglenes insolens* Simon from the Chatham Islands, but placed his new genus in the Agelenidae, having been misled by the hairy appearance of the species. It will be shown below that *insolens* is identical with



Figs. 362-364 Head and cephalic sulci of *Mynoglenes titan* n. sp. male Fig. 362 Frontal view of head, showing sub-ocular sulci Fig. 363 right sulcus Fig. 364 floor of sulcus, showing clusters of secretory pores Each pore is slightly under 1 micron in diameter. Scanning electron micrographs.

rufocephalia (Urquhart 1888) which becomes the senior synonym, and also with *M.antipodiana* Berland 1922. Bryant (1933) redescribed Urquhart's type material; she placed some of the species, correctly, in *Mynoglenes*, but erected a new genus, *Paralinyphia*, to accommodate species most of which, including the type-species of the genus, *P.mundenia*, clearly belong to *Mynoglenes*. She appears not to have detached palps for illustration, and her figures were consequently drawn from arbitrary points of view and cannot be used for diagnostic purposes. *Paralinyphia* now becomes a junior synonym of *Mynoglenes*, and *Mynoglenes incerta* Bryant 1935, described from Urquhart's material, is here transferred to a new genus, *Pseudafroneta*. *Mynoglenes marrineri* Hogg is transferred to the new genus *Parafroneta*. *Mynoglenes chiltoni* Hogg has not been seen, but appears from the original description to be a valid *Mynoglenes*.

Methods of study

Mynogleninae present a number of unusual difficulties, both in the context of making specific definitions, and that of delimiting genera. Species

are differentiated by very few characters, and the morphological gaps between congeneric species are small. This means that in a situation where the collections available consist mostly of small samples which only erratically cover the geographical range of a given form it becomes difficult to distinguish between valid species and clinal variants. The situation is complicated by the problem of making comparisons between male genitalia in different states of preservation, taken from material whose duration of storage in spirit ranges over almost a century. In addition, the female epigynes are mostly of very similar appearance. Other than in the case of well-preserved material of a few species, it is only possible to work with cleared vulvae which have been dissected from the spiders. Much of the chaetotaxy is also unhelpful: it is complex, appears variable within species, and is often missing or damaged in old material. Finally, the range of adult sizes observed within populations also implies problems; it can be very great, and unlike the European Linyphiidae with which I am familiar, it is accompanied by size-variation in the palpal organs, and some changes in form resulting from allometric growth. Such genital lability is probably allowed by the extremely simple mechanics of copulation (Blest and Pomeroy, 1978).

As a result of this situation, the method adopted here differs somewhat from the established approach to Linyphiid systematics. Genera are established, as is now customary, in terms of male palpal anatomy, but secondary reliance only is placed upon patterns of spination. Except for the femoral spination, which is reliable and in some instances informative, the chaetotaxy is only given where obviously relevant, and often in general terms. The position of the first metatarsal trichobothrium, first shown by Millidge (1951) to be systematically valuable for Erigoninae, is given, but in Mynogleninae its position varies little and the extent to which it is affected by allometric growth has not yet been determined. The trichobothria are fine, and can be difficult to locate even in fresh material, and, since the segments bearing them are large, measurements of their position are not easy to achieve. It is expressed, following Locket and Millidge (1953) as a ratio:

$$\frac{\text{Distance of base of trichobothrium from proximal end of metatarsus}}{\text{Length of metatarsus}} = \text{Tm I.}$$

Male genitalia Many of the palpal organs are presented as simple line drawings. They were detached from the spiders, and drawn immobilised in dishes of 70% ethanol by pressing them gently against a film of petroleum jelly mixed with paraffin oil (2:1) until trapped by their hairs. They were then carefully manipulated into the appropriate position. Because of the great similarities between allied species, the aspects of view chosen become critical, and special features of handling are noted under the various genera. In general, two aspects are most useful: the ventral surface of the palpal organ, and its outer lateral aspect.

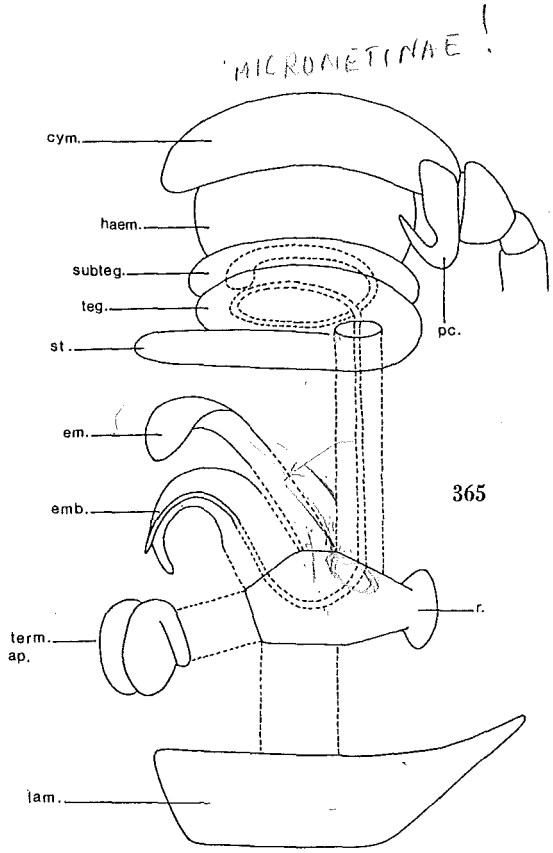
For detailed palpal anatomy, the palps were expanded by soaking them in 10% NaOH at room temperature, passed through distilled water, and then transferred directly to polyvinyl alcohol after dissection of the palpal organ from the cymbium. The organ was then mounted under a cover slip. Here, the important features to preserve are the articulation between the embolic division and the tegulum and, in *Pseudafroneta* and *Parafroneta*, the shapes of the conductor and embolus. Final adjustment of the mount was achieved by using a large drop of medium, and moving the cover-slip with light pressure so as to exercise an appropriate shearing force on the palpal organ. With practice, this technique gives replicable results, and does not damage the relevant structures, although it distorts the tegulum and suprategulum. In the few instances where it was necessary to examine a unique type in this manner, the left palp was mounted, and the right palp used for diagnostic illustration.

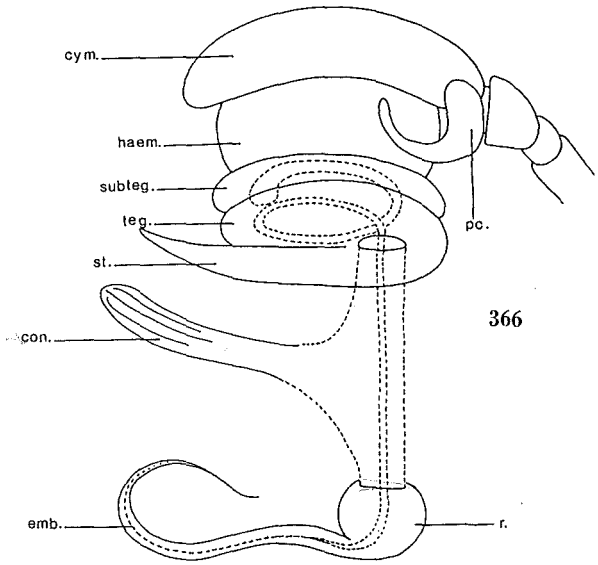
Female genitalia Exceptionally, drawings are given of epigynes. For most spiders, the vulva was dissected free from the abdomen, soft tissues removed in 10% NaOH, and the organ soaked for 30 minutes in a large volume of distilled water before being dehydrated through an ethanol series, passed through clove oil and xylol, and mounted dorsal side up in Eukitt which had been allowed to stiffen by partial evaporation of the solvent. The ducts, receptacula, and accessory glands are heavily sclerotised, and are not softened by this treatment, and undistorted preparations are readily prepared. Polyvinyl alcohol or lactic acid are not suitable because they produce softening and distortion. Vulvae are illustrated by photographs.

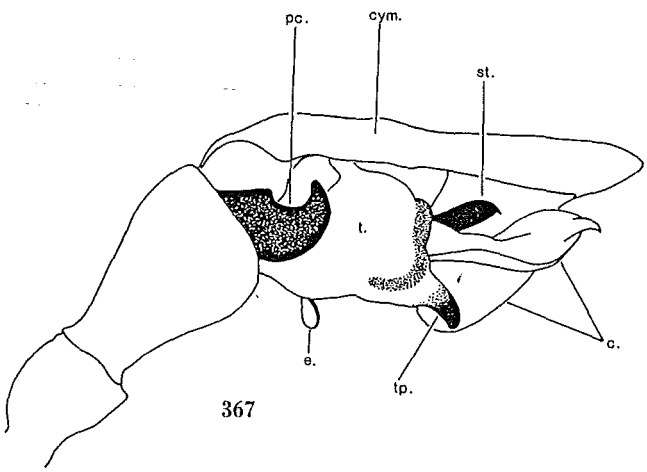
GENITAL ANATOMY

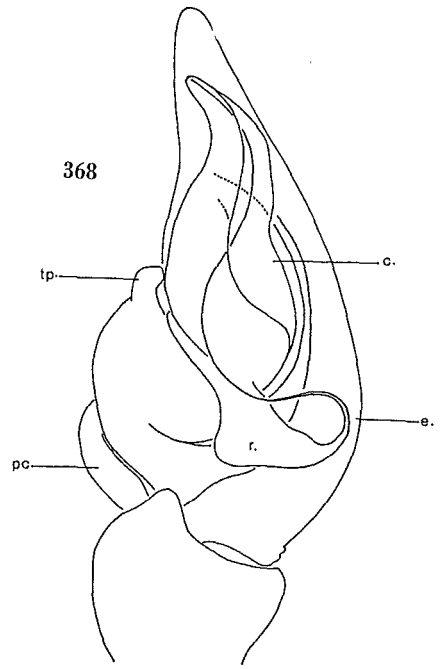
The palpal organ

The anatomy of the palpal organ is best understood with reference to the unmodified type found in *Mynoglenes* (Figs. 367, 368). The palp is shown in the unexpanded state; in Mynogleninae, artificial expansion mimics the first haematodochal expansion of copulation rather closely, and there is no secondary unfolding of the palpal organ, so that its components remain in the position normally held at the start of intromission. The *tegular complex* (*t*) is simple, and distally is produced into a hook-shaped *suprategulum* (*st*). Ventrally, with respect to the unexpanded palp, there is a small blunt process, termed here the *tegular prominence*, directed slightly forwards and downwards, (*tp*). The *conductor* (*c*) is a broad, boat-shaped sclerotised membrane, broadly attached at the base of the organ to both the tegulum and to the *radical component* (*r*) of the embolic division. The radical component is small, and is fused to and continuous with the *embolus* (*e*), which in *Mynoglenes* is a long, filiform tube, tapering gradually to a tip-diameter which is usually of less than 3 microns. The conductor forms a sheath for the embolus, which lies in a groove within it in such a way that the tips of embolus and of conductor









Figs. 365-366 Diagrams to show the main components of Linyphiid palpal organs Fig. 365 Linyphiinae, adapted from Van Helsdingen (1969) Fig. 366 Mynogleninae. Cym = cymbium pc = paracymbium haem = haematodocha subteg = subtegulum teg = tegulum st = suprategulum em = embolic membrance emb = embolus term. ap = terminal apophysis r = radix lam = lamella characteristica. In the Mynogleninae, r is best regarded as a 'radical component' with an uncertain relationship to the radix of Linyphiinae.

Figs. 367-368 Diagrams to show the main components of the palps of Mynogleninae used for diagnostic purposes, derived from *M.titan* n. sp. Fig. 367 Outer lateral aspect Fig. 368 ventral aspect. pc = paracymbium cym = cymbium t = tegulum st = suprategulum e = embolus c = conductor tp = tegular prominence.

coincide. At the base of the palp, at its inner side, the embolus forms a large free loop projecting outside the *cymbium* (*cym*) and flattened against it. During intromission, the slack is taken up as the embolus is thrust through the conductor and deep into the vulva (Blest and Pomeroy, 1978).

Diagnostically, it is important to identify structures and appearances which are not dependent upon states of preservation, and which are not altered too drastically by small errors of orientation during their examination. Those seen from the *outer lateral aspect* are (a) the suprategulum, whose form varies considerably; (b) the conductor and its folds; (c) the profile of the tegular prominence; (d) the profile of the *paracymbium* (*pc*) a small sclerite present in all Linyphiidae attached basally to the outer margin of the cymbium. The *inner lateral aspect* reveals little more than the basal embolic loop and a profile of the conductor. The *ventral aspect* shows a number of characters, of which the most important is the shape of the conductor, and the tip of the suprategulum which projects beyond it. Although the shape of the radical component varies between species, it can be a difficult character to employ because small movements of the embolic division with respect to the tegular complex consequent upon preservation alter its appearance. It is not employed here for that reason, although it is valuable when comparisons are made between specimens. Finally, it should be emphasised that identifications cannot, in this group, be made from any one palpal character alone. Each character has a small number of distinct states, and it is the way in which the alternative states are assorted and combined within species which makes their diagnosis possible.

The female vulva

The basic form of the *Mynoglenes* vulva is shown in Figs. 369, 370. The posteriorly-directed orifice is bounded dorsally by a *dorsal plate* (*d*), and ventrally by epigynal cuticle which is produced medially into an obtuse *scape* (*sc.*) bearing a socket at its apex. The orifice above the scape divides into two atria (*at.*) which narrow to helical ducts, the *spiral bursae* (*br.*), and terminate in *receptacula* (*r.*). From the receptacula, ducts pass axially with respect to the bursae to terminate in the *accessory glands* (*gl.*). From the accessory glands, sclerotised ducts, here termed *fertilisation ducts* (*fd.*) deliver sperm stored by the receptacula to the oviducts. The oviducts, ovipositor and ovaries are soft structures, and are not preserved in NaOH preparations, so that the fertilisation ducts appear to end as open tubes.

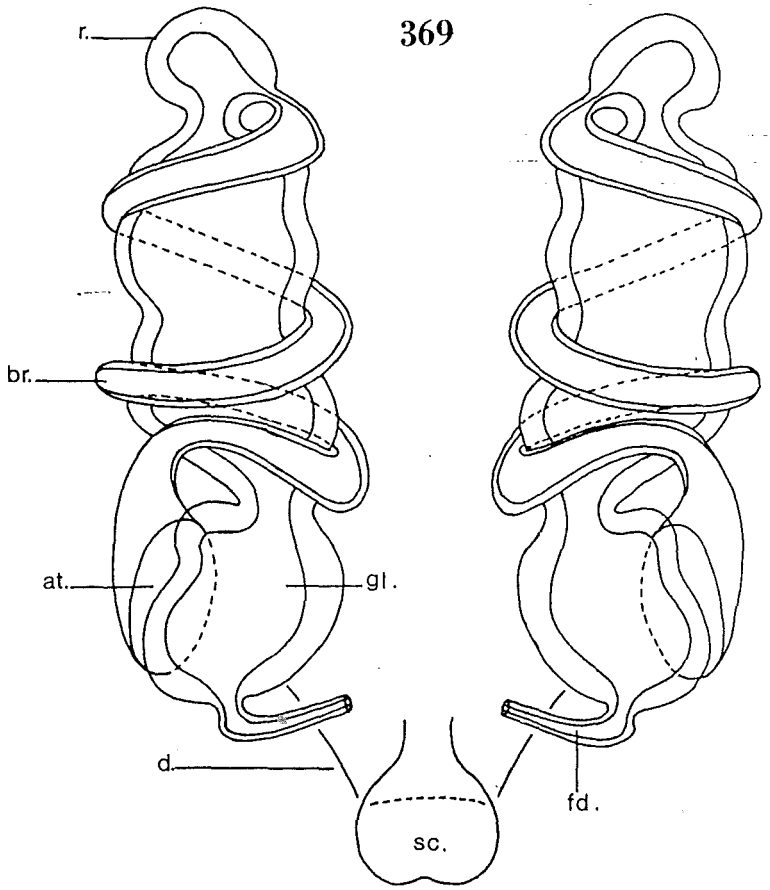


Fig. 369 Diagram to show the main components of the vulvae of Mynogleninae, derived from Group II of *Mynoglenes*. r = receptaculum br = spiral bursa at = orifice of atrium gl = accessory gland fd = fertilisation duct d = dorsal plate sc = scape.

During copulation in *Mynoglenes diloris*, *M.titan* and *M.major* (Blest and Pomeroy, 1978), the suprategulum of the palp engages the socket of the scape, and the conductor is thrust into the appropriate atrium. The embolus lies axially with respect to the conductor, and is thrust through it after genital locking to pass up the spiral bursa and presumably as far as the receptaculum. The mechanics of locking will be discussed later when we come to consider the evolution of the genitalia within the subfamily, but here it may be noted that there is always a broad correlation between the length of the embolus and the number of turns in the bursae. However, the relationship between the components of the vulvae is preserved in *Mynoglenes*, *Promynoglenes*, *Metamynoglenes*, and *Pseudafroneta*, until in the remaining genera simplification of both palpal organs and vulvae to some extent obscures the pattern described above (*Novafroneta*, *Parafroneta*, *Megafroneta* and probably *Cassafroneta*, whose female is not known); in *Metafroneta* and *Hyperafroneta* a radical transformation of the genitalia has taken place, and the vulvae do not conform to the typical *Mynoglenes* pattern. They will be discussed below when these two genera are defined.

The major problems of female diagnosis concern *Mynoglenes*, *Promynoglenes*, *Metamynoglenes* and *Pseudafroneta*. Externally, the scapes differ specifically either little, or not at all. The sclerotised internal structures show erratically through the epigynal cuticle, and the subtle differences between species are totally obscured. Cleared and mounted preparations are essential, but in many species the precise disposition of the structures is quite variable. Figs. 417-420 show vulvae of two *Mynoglenes diloris* taken at random from a single sample of a population at Kaikoura, North Canterbury, together with two vulvae from different samples. Figs. 385-387, show three different vulvae of *Mynoglenes subdola*. It can be seen that although the *gestalts* presented are similar, and the number of turns of the bursae and the profiles of the receptacula and accessory glands are fairly constant, the detailed appearance of the ducts varies considerably. Diagnosis from any method of illustration becomes somewhat hazardous as a result, and should be attempted with caution. Species have only been erected on females alone where the vulval characteristics are extremely clearcut.

Mynoglenes Simon 1905

Small to medium sized spiders 2-10 mm. in body length. Carapace smooth or slightly rugose, without conspicuous sexual dimorphism. Eyes: Fig. 362. Abdomen with weak foliate dorsal pattern, variously developed, sometimes absent or reduced to a few dark patches. Legs (Figs. 371-374) sometimes with annulations, usually unadorned. Female palp without claw (Fig. 375). Femur I with single prolateral spine only, remaining femora without spines. Tibiae and metatarsi 1,2 with spines weak, especially in the males where they may be reduced to strong hairs; without apical spines; tibiae with two dorsal rows of tri-

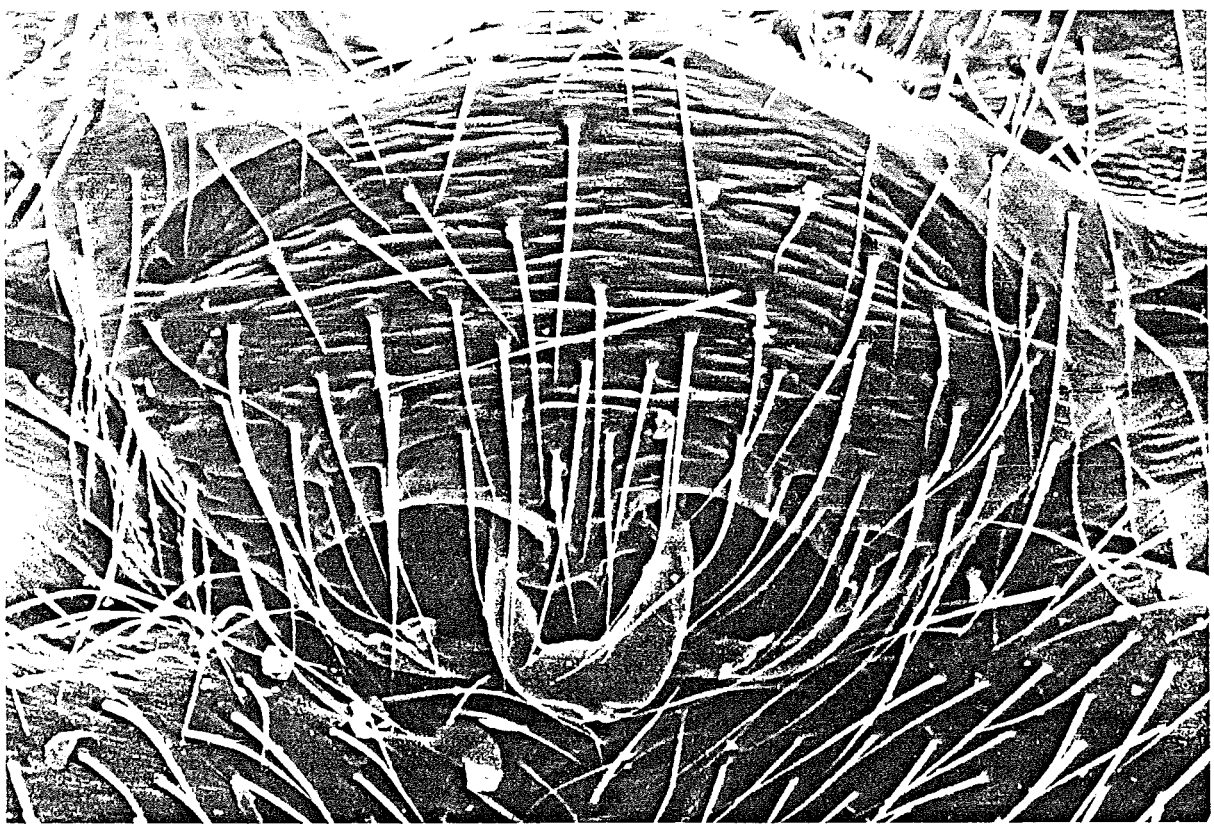


Fig. 370 *Mynoglenes diloris* (Urquhart) Epigynum scanning electron micrograph

chobothria. Tibiae and metatarsi 3,4 with numerous strong spines and with apical spines. Tm. I = 0.6 – 0.9. Male palp: paracymbium bluntly sickle-shaped, occasionally distally acuminate; sometimes broad, but less so than in remaining genera. Suprategulum strong, elongated, with a small tegular prominence remote from it. Conductor large, to various degrees membranous, usually boat-shaped, attached broadly at its base to tegulum and to the radical component of the embolic division. Radical component clearly distinct from both duct membrane and conductor, small, bulb-shaped, continuous with a long filiform or spiniform embolus, and situated at base of organ at its inner side where it presses against the inner margin of the cymbium. Embolus forming a large or small loop lying in part outside the cymbium and pressed against its mesal surface, the axis of the loop lying horizontally and at right angles to the longitudinal axis of the cymbium; the loop, however, may be small in some species, and barely extend beyond the margin of the cymbium. Distal part of embolus sheathed by a fold of conductor membrane. Vulva: with paired, posterior atria, and a well-developed median scape whose posterior margin is either level with or slightly posterior to the hind margin of the dorsal plate. Dorsal plate not fused posteriorly to scape (Figs. 376, 377). Bursae either helical or strongly angled, rarely straight. Receptacula small. Bursae, receptacula and accessory glands strongly sclerotised.

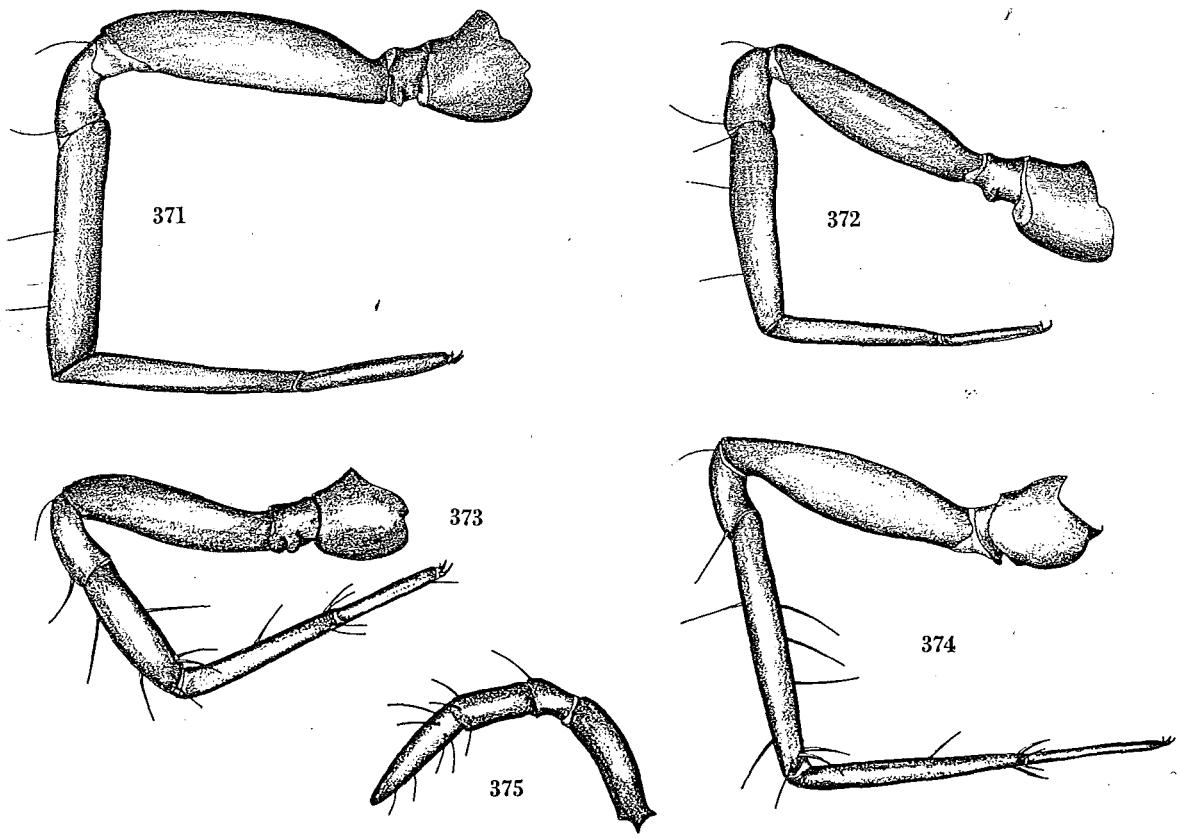
Type species: *Mynoglenes rufocephalia* (Urquhart 1888) (= *Mynoglenes insolens* Simon 1905 = *Mynoglenes antipodiana* Berland 1925).

This large and very difficult genus comprises a considerable range of forms, from those whose large, well-developed palps possess long emboli and whose vulvae have helical bursae, to those with short, quite stout emboli with a modest basal loop, and vulvae whose bursae are no more than strongly angled. It does not seem possible to subdivide the genus, because the few strong characters are almost randomly assorted amongst the species, and attempts to do so produce obviously artificial groupings. The species-groups given below are intended primarily for diagnostic convenience.

The spiders are for the most part found in marginal or transitional habitats, such as manuka scrub bordering forest, pasture, marshes, and the roots of herbage of waste ground. Some species (e.g. *M.major*, *M.titan*, *M.fluviatilis* and *M.fucatina*) are associated with creek-beds, and the first three may build their sheet-webs over running water. Other species have been found in native forest (e.g. *M.paradoxa* which occurs in tree-fern detritus in Fiordland). Others, including numerous undetermined females, have been taken under stones on high ground above 4000 ft.

The egg-sacs of all species for which they are known are flattened structures adhering to the underside of stones or of leaves in litter and logs.

Genital characters serve to divide the species into groups, but within groups the female characters are poorly differentiated and difficult to use success-



Figs. 371-375 *Mynoglenes diloris* (Urquhart) Legs and female palp of left side, to show the distribution of major spines. Hairs and trichobothria are not shown. Fig. 371 leg 1 Fig. 372 leg 2 Fig. 373 leg 3 Fig. 374 leg 4 Fig. 375 female palp.

fully. Male palps are distinctive, although, again, the differences between species are small. Orientation during examination is critical. The outer lateral aspect of the palp is drawn with the palp so disposed that *the apparent size of the tegular prominence seen in profile is maximised.* Small departures from this position can greatly alter the appearance of the suprategulum, and it should be noted that the paracymbium is viewed slightly obliquely from this angle, so that it may not seen to correspond precisely to the form stated for the genus; a separate manipulation is needed to establish its shape. Comparisons of the shape of the conductor are best made from the ventral aspect. The angle of articulation of the palpal femur with the tibia is usually around 90° in preserved material and the ventral aspect is defined as the position in which the femur points directly upwards towards the observer. The convention by which line drawings represent the profiles of the conductor and the suprategulum behind it are shown in Figs. 367-368.

Mynoglenes may be conveniently divided into groups which are fairly easy to recognise:

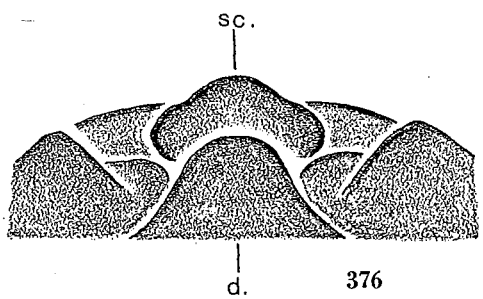
Group I. *M.subdola, M.innotabilis, M.minutissima.* The palpal cymbium has a characteristic 'hump' in its basal third; spines are well-developed on legs 1,2. *Minutissima* is included in this group, although the male is not known, because of this last character, and the resemblance of the female to *innotabilis.* The vulvae possess bursae with two helical turns.

Group II. *M.mundenia, M.horningi, M.inexacta.* Large species, whose long emboli have exceptionally prominent basal loops. The conductors are narrow and bluntly pointed distally, while the tegular prominences are small. In correspondence with the long emboli, the vulvae have bursae with 4-5 helical turns. While legs 1,2 have their spines reduced or almost reduced to hairs, the spines of legs 3,4 are strong, and the tibiae in particular often have super-numerary spines, whose number may differ between corresponding tibiae.

Group III. *M.rufocephalia, M.diloris, M.fluviatilis.* The emboli have large basal loops, but less so than in Group II. The conductors are broad. The vulvae possess bursae with only 2-3 helical turns.

Group IV. *M.silvicola, M.titan, M.paradoxa, M.contorta, M.similis.* The emboli have short basal loops, the conductors are broad, and the tegular prominences strongly developed in such a way as to point forwards. The vulvae possess bursae with 2 helical turns.

Group V. *M.abbreviata, M.rupicola, M.major, /M.fucatina.* Emboli with very short



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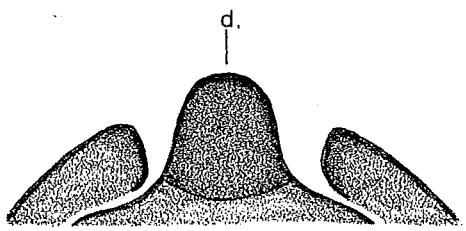

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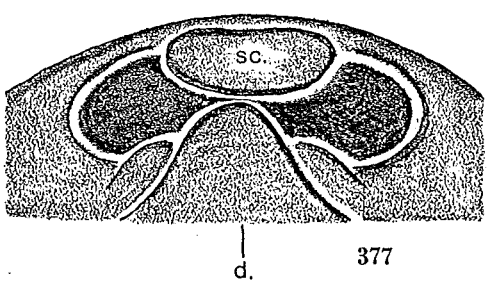

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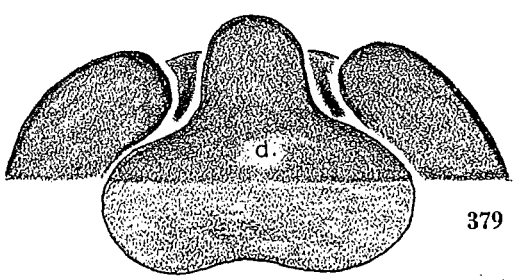


379

Figs. 376-377 Organisation of the epigynal scape in *Mynoglenes*, derived from dissections of *M.mundenia* Fig. 376. Scape and dorsal plate viewed from the dorsal side, and Fig. 377 from behind. The posterior margins of scape and dorsal plate are separate Figs. 378,379. Organisation of the epigynal scape in *Pseudafroneta*, from dissection of *P.perplexa* Fig 378 Scape and dorsal plate viewed from the dorsal side Fig 379 from behind. The dorsal plate extends to the tip of the epigynal scape, obscuring it from both points of view, and their tips are fused Fig. 502 shows the epigyne from its ventral aspect, and it appears that most of the mechanical support for the scape must be provided by the dorsal plate, for the socket is only connected to the epigynum by a thin bar of weak cuticle.

basal loops, which remain relatively stout and strongly-sclerotised to their tips. Conductors rather strongly sclerotised, tegular prominences small. Vulvae with the bursae reduced in correspondence to the short emboli.

Group VI. *M.redacta, M.banksi, M.brevipes, M.chiltoni, M.insignis, M.dunstani.* Palpal organs reduced, emboli short with minimal basal loops, tegular prominences small, conductors narrow and membranous. Vulvae with bursae reduced to correspond to the short emboli.

Group VII. *M.tegulata.* As Group VI, but the palpal organ has an additional flange-like tegular process.

Mynoglenes subdola (O.P.-Cambridge)

Linyphia subdola O.P.-Cambridge 1879. Proc. Zool. Soc. Lond. 693.

Figs. 380-382, 385-387.

MALE

Measurements

Carapace	length 1.58	width 1.17
Abdomen	length 2.00	width 1.00

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	1.42	0.42	1.42	1.25	0.83	5.34
2	1.33	0.42	1.17	1.00	0.83	4.75
3	1.17	0.38	0.83	0.75	0.58	3.71
4	1.25	0.42	1.42	1.17	1.00	5.26

Colour Cephalothorax, chelicerae, dusky brown, legs brown with dark annulae. Abdomen with blackish folium covering the whole dorsal surface except for a paler, median anterior patch and a series of posterior pale, narrow bars.

Legs 1,2,3,4 all spines strong. Tm I = 0.67

Palp Figs. 380-382.

FEMALE

Measurements

Carapace	length 2.00	width 1.25
Abdomen	length 2.67	width 1.50

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	1.83	0.50	1.58	1.50	0.83	6.24
2	1.58	0.50	1.42	1.33	0.67	5.50
3	1.33	0.42	1.17	1.08	0.67	4.67
4	1.67	0.42	1.50	1.42	0.83	5.84

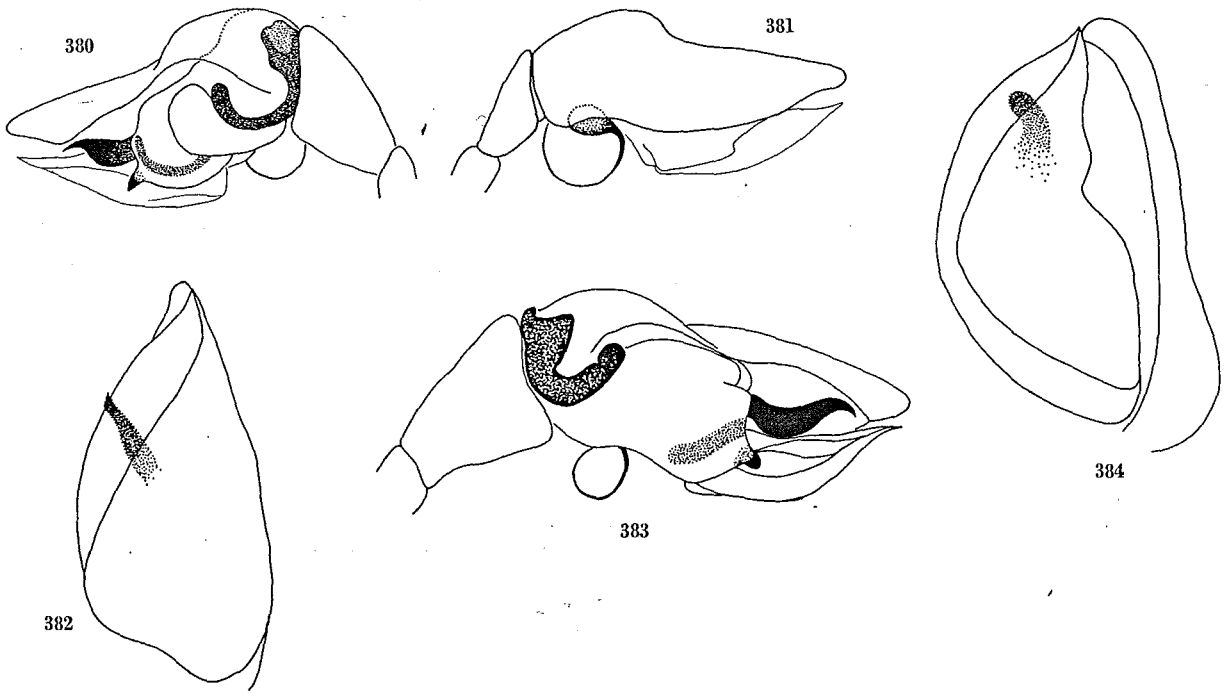
Colour As in male.

Legs As in male. (Many specimens have supernumerary spines on Tibiae 3,4). Tm I = 0.73

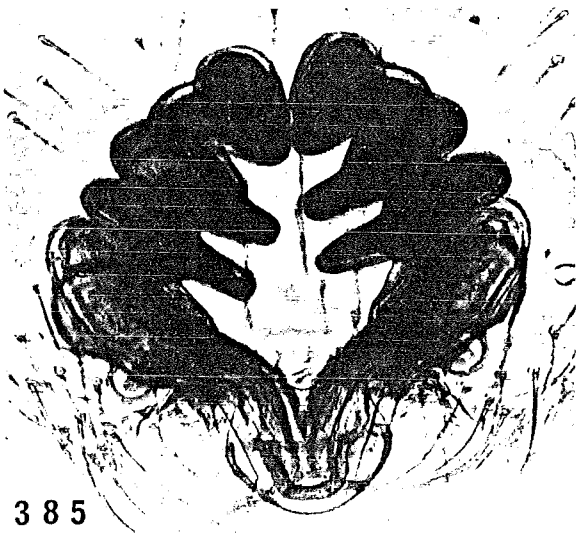
Vulva Figs. 385-387.

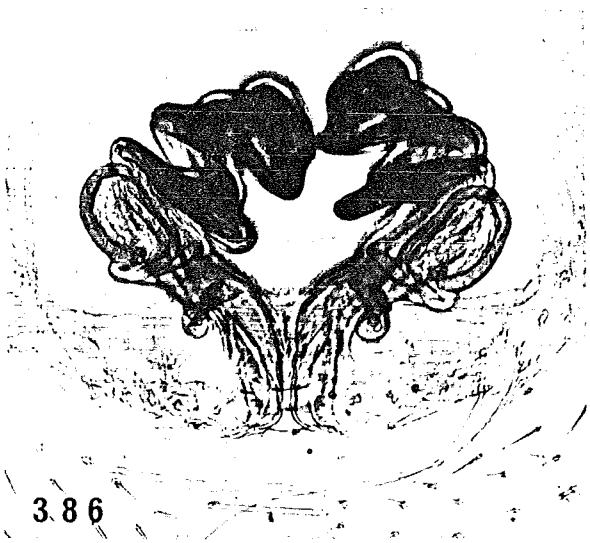
Types In the Pickard-Cambridge Collection in the Hope Department of Entomology, Oxford (not seen). Paratype material is identical with the samples listed here. The descriptions are from a pair collected at Hokitika, 4.ix.74, A.D.B.

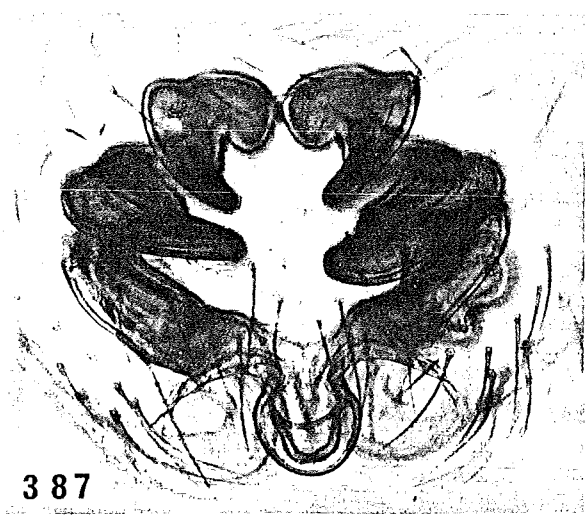
Records North Island: Moanatuatua Swamp, Hamilton, 22.vi.1974, A.D.B., Bruce Park, Manawatu, 1.i.1967, R.R.F., South Island: Marlborough, Kowhai Bush, Kaikoura, marshy grass, 27.xii.1974, A.D.B., Kaikoura, supralittoral, grass and sedge, 24.xii.1974, A.D.B., Keans Point, Kaikoura, sedge, 29.vi.1974, A.D.B. Kaikoura, sedge tussocks, 21.v.1974, A.D.B. Kaikoura, littoral



Figs. 380-382 *Mynoglenes subdola* O. Pickard-Cambridge Figs. 383-384 *M.innotabilis* n. sp.







Vulvae Figs. 385-387 *Mynoglenes subdola* (O.P.-Cambridge) Fig. 385, Kaikoura Fig. 386 Moanatuatua Swamp, N. Island Fig. 387 Ashley River. Fig. 388 *M.minutissima* n. sp. Fig. 389 *M.innotabilis* n. sp.

grasses, 17.i.1974, 17.v.1974, A.D.B., Canterbury, Oxford-Ashley Riverbed, 1.xii.1974, A.D.B. Lake Ellesmere, marsh detritus, 1.ii.1975, A.D.B., Otago: Dunedin, Leith Saddle, grass and manuka, 17.xii.1974, A.D.B., Henley grass in swamp, 20.iv.1975, R.R.F., Lake Tuakitoto niggerheads 14.ix.1967, R.R.F., Westland: Hokitika Beach, under logs and grass 4.ix.1974, A.D.B., Hokitika Beach, in driftwood, 2.ix.1974, A.D.B., Hokitika, Takutai Spit, in sedge tussock, 12.vii.1974, A.D.B., Hokitika, in grass, 14.vii.1974, A.D.B.

M.subdola is common in the supralittoral zone both at Kaikoura and in the Hokitika area. Elsewhere, I have taken it in the Ashley River Gorge, at Leith Saddle, Dunedin, and in the Moanatuatua swamp near Hamilton, so that it is clearly not confined to brackish habitats, although the paucity of material in other collections implies that it is not often found away from them. The Moanatuatua specimens may prove to belong to a distinct species when the males are found. All South Island females examined have vulvae of the form figured from a Kaikoura specimen. Both Moanatuatua specimens were similar (Fig. 386), although the differences from South Island forms are rather less pronounced than the photograph suggests.

Mynoglenes innotabilis n. sp.

Figs. 383-384, 389.

MALE

Measurements

Carapace	length 1.04	width 0.72
Abdomen	length 1.08	width 0.56

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	0.72	0.24	0.60	0.50	0.40	2.46
2	0.56	0.24	0.52	0.44	0.36	2.12
3	0.48	0.24	0.36	0.40	0.32	1.80
4	0.68	0.24	0.60	0.52	0.44	2.48

Colour Cephalothorax, abdomen and legs uniformly greyish-yellow, without pattern.

Legs 1,2 Spines moderately developed. 3,4 Spines strongly developed, tibiae with two dorsal spines. Tm I = 0.63.

Palp (Fig. 383-384). From the ventral aspect, the suprategulum is concealed behind the conductor, whereas in all other species it projects beyond it. The cymbium has a slight basal hump similar to that of *M.subdola*, and as it leaves the radical bulb the embolus is directed forwards in the same way.

FEMALE

Measurements

Carapace	length 1.36	width 0.88
Abdomen	length 1.44	width 1.04

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	1.00	0.40	0.88	0.72	0.56	3.56
2	0.92	0.40	0.72	0.60	0.52	3.16
3	0.84	0.40	0.60	0.52	0.28	2.64
4	1.00	0.40	1.00	0.76	0.60	3.76

Colour Cephalothorax and legs pale yellow-brown. Abdomen greyish-yellow with a folium feebly outlined by white spots. Ventral region also with white spots.

Legs Spines as in male. Tm I = 0.57

Vulva Fig. 389. Similar to that of *M.subdola* but all components are much smaller in the present species.

Types Holotype male; Flagstaff, Dunedin, from moss and detritus under tussock, 27.iii.77. A. D. Blest. Allotype female; Flagstaff, Dunedin, tussock, 24.iii.55. B. J. Marples.

Records Warrington. 6.i.55. B. J. Marples. A single female.

Mynoglenes minutissima n.sp.

Fig. 388

FEMALE

Measurements

Carapace	length 1.12	width 0.80
Abdomen	length 1.16	width 0.84

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	0.84	0.24	0.68	0.48	0.44	2.68
2	0.68	0.24	0.56	0.48	0.40	2.36
3	0.60	0.24	0.52	0.44	0.36	2.16
4	0.80	0.28	0.76	0.64	0.44	2.92

Colour Cephalothorax, chelicerae and legs, yellow. Abdomen dusky grey with no pattern.

Legs 1,2 spines moderately strong. 3,4 spines strong. Tm I = 0.78

Vulva Fig. 388, (from paratype).

The small size of this species distinguishes it from all other subantarctic *Mynoglenes*; it is also quite distinct from the mainland *M.innotabilis* of similar size and appearance, so that it is safe to describe it as a separate species in the absence of a male.

Types Female holotype: Antipodes Island, Central Valley, litter, 20.ii.69. G. Kuschel (Ent. Divn. D.S.I.R.). Female paratypes from same sample.

Records Antipodes Island, from mould under *Poa literosa* and *Polystichum vestitum* at top of slopes above Ringdove Bay. 10.xi.50. E. G. Turbott. Central Valley, Antipodes Island, 25.ii.69. G. Kuschel.

GROUP II

Mynoglenes mundenia (Urquhart).

Linyphia mundenia Urquhart 1894. Trans.N.Z. Inst. 26:207.

Paralinyphia mundenia (Urquhart). Bryant 1933, Rec. Cant. Mus. 4:16.

Figs. 392-394, 399, 402-403.

MALE

Measurements

Carapace	length 2.25	width 1.58
Abdomen	length 2.50	width 1.17

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	1.67	0.58	1.33	1.25	0.83	5.66
2	1.33	0.50	1.17	1.17	0.75	4.92
3	1.17	0.42	1.00	0.83	0.42	3.84
4	1.50	0.58	1.42	1.25	0.75	4.50

Colour Cephalothorax, chelicerae and legs yellow-brown. Abdomen grey, with folium reduced to two darker lateral stripes. Ventral region grey with some white spots. Fig. 402.

Legs 1.2 spines reduced to hairs. 3.4 spines strong, (supernumerary spines often present on tibiae). Tm I = 0.66.

Palp Figs. 392-394. The shape of the suprategulum clearly distinguishes this species from *M.horningi*.

FEMALE

Measurements

Carapace	length 2.42	width 1.58
Abdomen	length 3.67	width 2.08

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	1.83	0.67	1.67	1.42	0.92	6.51
2	1.67	0.67	1.25	1.17	0.83	5.59
3	1.33	0.58	1.08	1.17	0.75	4.91
4	1.83	0.67	1.58	1.58	1.00	6.66

Colour As in male.

Legs 1.2 spines moderately strong. 3.4 spines very strong (supernumerary spines often present on tibiae). Tm I = 0.76.

Vulva Fig. 399. Very close to *M.horningi*, and possibly not distinguishable from it. The shape of the scape varies and is not a very reliable character.

Types Powell Collection. In extremely poor condition, but with the main palpal characters clearly visible. (Canterbury Museum).

Records Canterbury. South Brighton, pine and grass detritus, 20.vii.1974, A.D.B., South Brighton, grass and litter under lupins, 30.viii.1974, A.D.B., New Brighton, grass and litter under lupins, 30.viii.1974, A.D.B., Deans Bush, Christchurch, flax litter 18.vii.1975, A.D.B., Deans Bush, wet litter, 7.ix.1975, A.D.B., Okuti Stream, at sides, 21.xi.1975, A.D.B., Kaituna Valley, 10.ix.1954, R.R.F., Waitaki River, under stones, 3.xii.1975, A.D.B., Southland. Riverton, Wakapatu, *Juncus* on wet sand, 22.i.1975, A.D.B., Longwood Range, west side, 1.ix.1948, J. H. Sorensen., Fiordland. Lake Lochie, marsh detritus, 19.i.1975, A.D.B., Lyttles Flat, tussock, 17.ii.1975, A.D.B., Homer Tunnel, wet detritus, 12.ii.1975, A.D.B., Lake Te Au, in moss, 12-24.i.1953, R.R.F.

Description based on specimens from South Brighton.

Mynoglenes horningi n.sp.

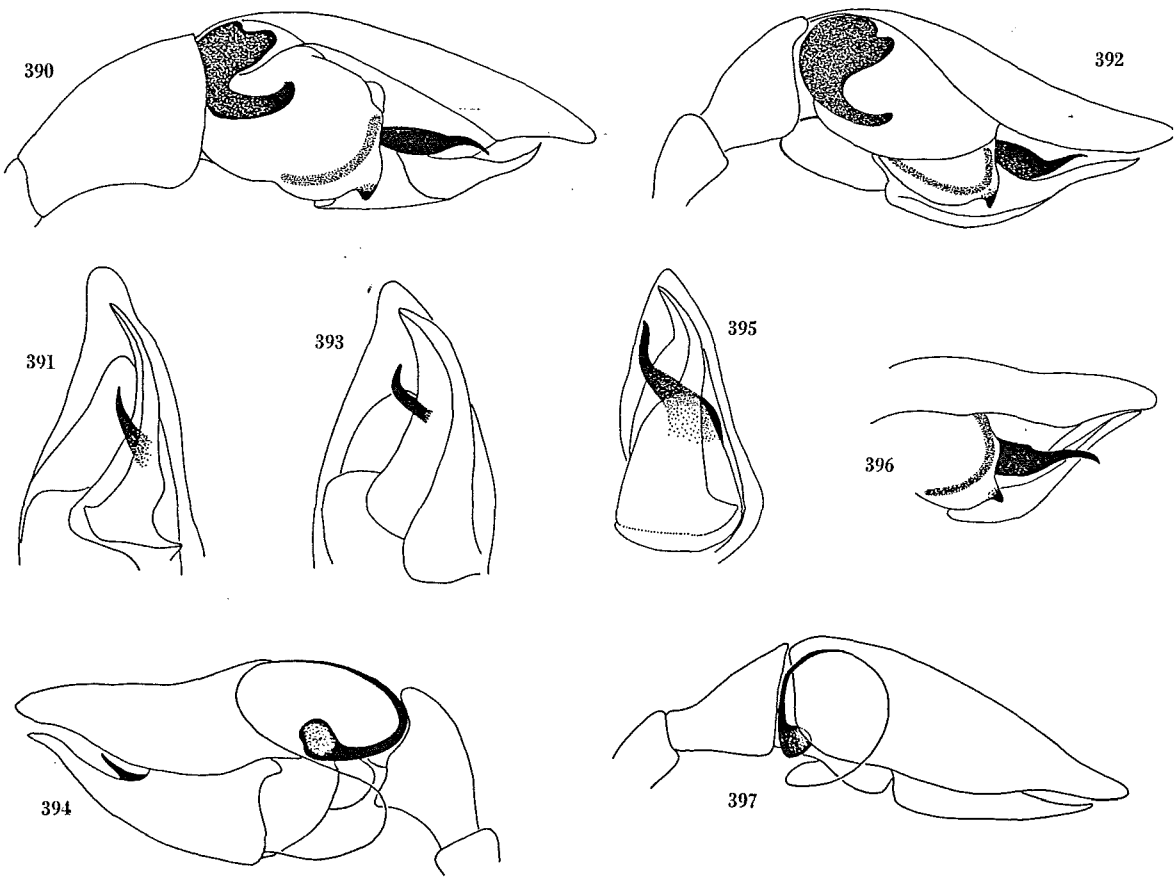
Figs. 390-391, 398, 404, 408-409.

MALE

Measurements

Carapace	length 3.50	width 2.33
Abdomen	length 3.58	width 1.83

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	2.75	1.00	2.58	2.17	1.25	9.75
2	2.50	1.00	2.08	1.92	1.08	8.58
3	2.00	0.83	1.58	1.75	1.08	7.24
4	2.50	1.00	2.50	2.50	1.25	9.75



Figs. 390-391 *Mynoglenes horningi* n. sp. Figs. 392-394 *M.mundenia* (Urquhart) Figs. 395-396 *M.inexacta* n. sp. Fig. 397 *M.diloris (Urquhart)*

Colour Cephalothorax, chelicerae and legs chestnut brown. Abdomen greyish-yellow, with pale median stripe flanked by darker stripes forming a poorly-defined chevron pattern. Ventral region grey flanked by two dark lateral stripes. Maxillae Fig. 409. Chelicerae Fig. 408.

Legs 1,2 spines weak, almost reduced to hairs, 3,4 spines very strong. Tm I = 0.77, trichobothrium strong and rather short.

Palp Figs. 390, 391. Embolus with large exposed loop.

FEMALE

Measurements

Carapace	length 3.50	width 2.33
Abdomen	length 4.33	width 1.83

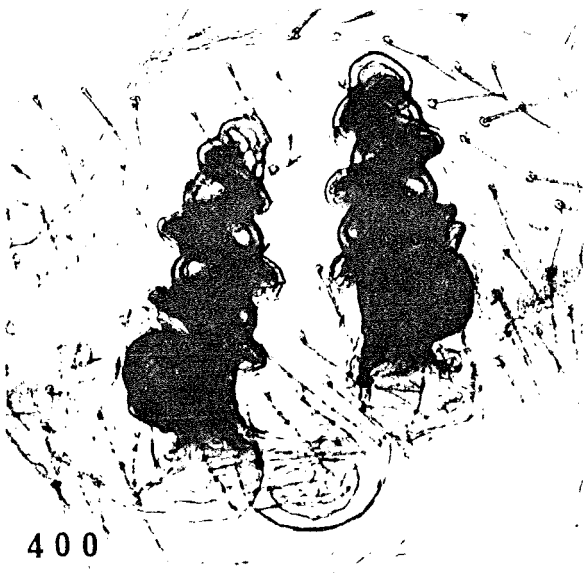
Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	2.50	1.00	2.33	2.42	1.33	9.58
2	2.33	1.00	2.00	2.08	1.17	8.58
3	1.83	0.75	1.67	1.75	1.00	7.00
4	2.50	1.00	2.50	2.58	1.33	9.91

Colour Cephalothorax, chelicerae and legs as in male. Abdomen dark grey, paler areas forming an obscure median chevron. Ventral region with a clearly-defined pale stripe.

Legs 1,2 spines moderately developed, clearly distinct from hairs, but no tibial or metatarsal apical spines. 3,4 spines very strong. Tibiae bear 3-7 strong ventral spines (unequal in number on the two tibiae, and showing much individual varation in number and placement). Tm I = 0.79.

398

399



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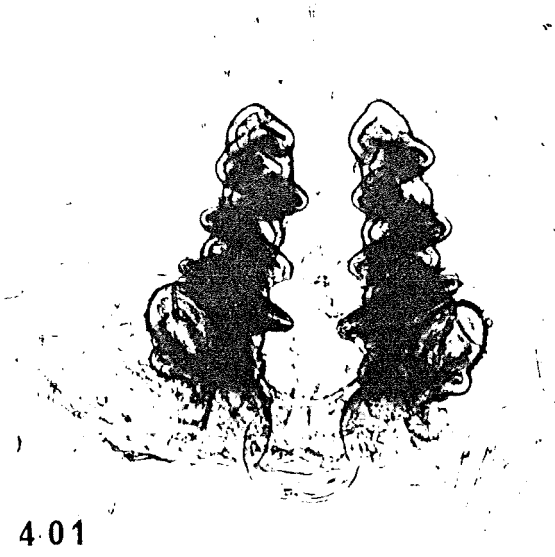


401

Vulvae Fig. 398 *Mynoglenes horningi* n. sp. Fig. 399 *M.mundenia* (Urquhart) figs. 400-401 *M.inexacta* n. sp. Fig. 400 Warrington, Otago, female allotype Fig. 401 Rock and Pillar Range, Otago

ulva Figs. 398, 404. Very close to *M.mundenia*.

Types Holotype male: Rose Island, E.side of Auckland Islands, 26.ii.73, Carol J. Horning. Female and sub-adult paratypes, same sample. Allotype female: Camp Cove, Auckland Island, under logs in *Metrosideros* forest, 13.ii.73. J. S. Dugdale (Ent. Divn. D.S.I.R.).

Records Camp Cove, Carnley Harbour, algae 73/83, 11.ii.1973. J. S. Dugdale. Ranui Cove Port Ross, under logs and stones on forest floor. 8.xi.1954. E. S. Gourlay. Ranui Cove, Malaise trap, 28.ii.1972. Tagua Bay, Carnley Harbour, 11.ii.1973, moss 73/92. J. S. Dugdale. Ranui Cove, *Tilleae moschata* and *Lumex* sp. at upper supralittoral zone 31.i.1973. D. S. Horning. W. Shore Musgrave Pen. under debris at N.W.N. 31 I. 1966. K. A. J. Wise. Musgrave Pen. Beating swamp scrub *Coprosma* etc., 19.xii.1972. J. Farrell. Tagua Bay, Carnley Harbour, supralittoral. 11.ii.1973. J. S. Dugdale. Camp Cove, Carnley Harbour, litter 73/44. 22.ii.1976. J. S. Dugdale. Musgrave Harb. Pebble beach – foot Mt. Dromedary, 2.ix.1944, E. G. Turbott. Camp Cove, Pitfall 5-22.ii.1973, J. S. Dugdale. Camp Cove, under rocks at supralittoral 2.ii.1973, D. S. Horning. Magnetic Cove Stn. Adams Id. 1.ii.1966, G. Kuschel, *Stilbocarpa* bases and litter 20.v.1966. K. A. J. Wise. Magnetic Cove, Adams Is., 19.i.1966, G. Kuschel. Fairchild's Garden, Adams Is. Auckland Is. – Peat among *Stilbocarpa polaris* roots and stems 2.ii.1973, D. S. Horning. Enderby Is., swards at beach, 25.ii.1973, J. S. Dugdale. Sandy Bay, Enderby Is. under cow dung on grass 13.ii.1973, D. S. Horning. Sandy Bay, Enderby Is. under rocks at stream edge. 26.ii.1973, D. S. Horning. Enderby Is., under log, 11.iii.1943, W. D. Enderby Is. Auckland Island, ex dead shag chick 11.ii.1973, C. J. Horning, Enderby Is. under rock in shag colony, 14.ii.1973, Ewing Is., 18.i.1966, R. G. Ordish. Ewing Is. 18.i.1966, R. G. Ordish, Ewing Is., litter and peat under *Stilbocarpa polaris* 28.ii.1973, D. S. Horning. Ewing Is., above H.W. 27.xii.1962. Mt. Galloway 380 m, Antipodes Is. 23.ii.1969 litter 69/56. G. Kuschel.

Mynoglenes inexacta n.sp.

Figs. 395-396, 400-401.

MALE

Measurements

Carapace	length 1.50	width 1.00
Abdomen	length 1.67	width 0.83

Colour The specimens are bleached, but their colouration appears similar to *M.mundenia*.

Legs Tm I = 0.71.

Palp Figs. 395, 396. Very close to *M.mundenia* and *M.horningi*. Differences between the suprategula of *mundenia* and *inexacta* are consistent, though small, and do not appear to result from allometric growth.

FEMALE

Measurements

Carapace	length 1.75	width 1.17
Abdomen	length 2.08	width 1.25

Colour See comments on the male.

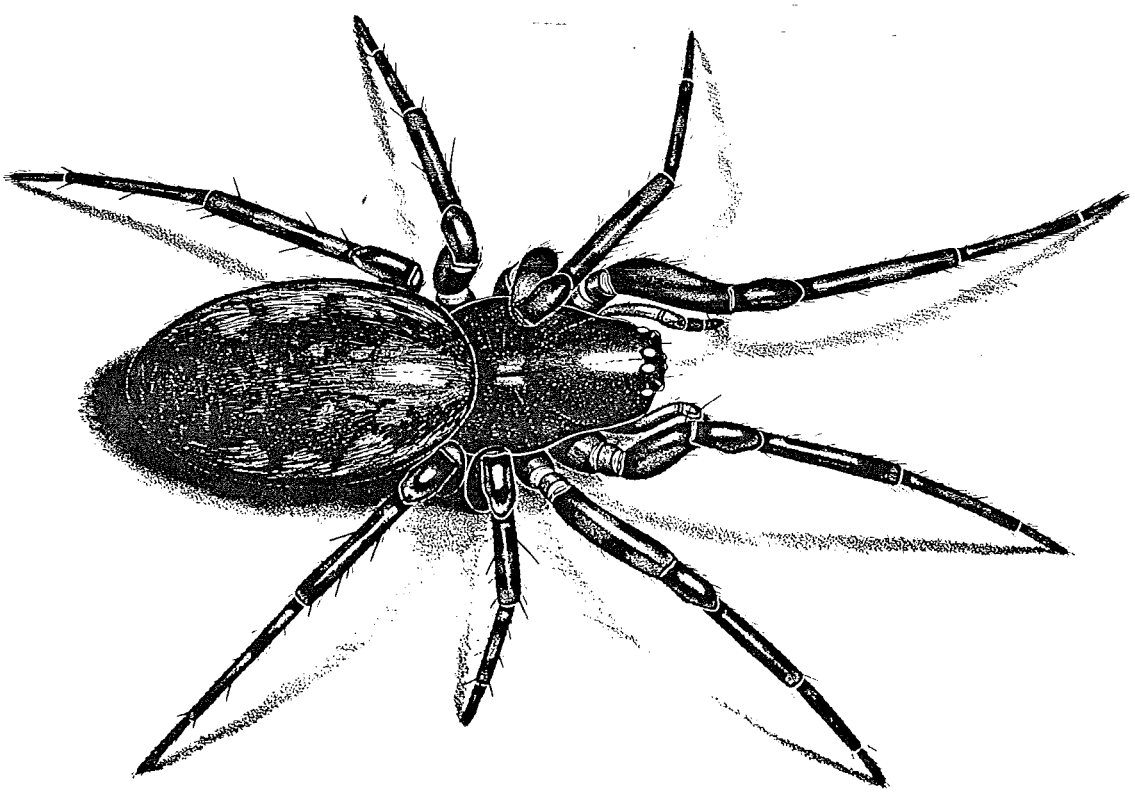


Fig. 402 *Mynoglenes mundenia* (Urquhart) female, Allan's Beach.

Legs Femur I (right) of this specimen has two prolateral spines, and 3 femur (right) has an anomalous prolateral spine. Tm I = 0.74.

Vulva Figs. 400, 401. Smaller than the vulva of *M.horningi*, but not otherwise distinguishable from it with certainty.

Types Holotype male, allotype female: Otago, Warrington, 1.vi.55, B. J. Marples (Otago Museum). Numerous paratypes.

Records Otago. Rock and Pillar Range, pitfall trap in bog near ski hut at 4500' 18.xii.68, J. Child. Rock and Pillar Range, 1 mile south of summit rock, 4500' 23.xii.69, J. Child.

GROUP III

Mynoglenes rufocephalia (Urquhart)

Linyphia rufocephalia Urquhart 1888. Trans. N.Z. Inst. 20:100. *Mynoglenes insolens* Simon 1905. Zool. Jahrb. Syst. 21(4):419. *Linyphia antipodiana* Berland 1925. Rec. Cant. Mus. 2:296. *M.insolens* Simon (in part). Berland 1931, Rec. Cant. Mus. 3: *Paralinyphia rufocephalia* (Urquhart). Bryant 1933, Rec. Cant. Mus. 4:18.

Figs. 410, 411-412, 421.

MALE

Measurements

Carapace	length 2.33	width 1.50
Abdomen	length 2.50	width 1.50

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	1.60	0.50	1.58	1.42	0.83	5.93
2	1.50	0.50	1.33	1.17	0.83	5.33
3	1.33	0.50	1.00	1.00	0.58	4.41
4	1.60	0.50	1.58	1.50	0.83	6.01

Colour Cephalothorax chestnut-brown with darker striae. Chelicerae dark brown. Legs pale brown with faint annulations. Abdomen with two dark lateral bands, central area lighter, broken by a faint chevron pattern and some white spots. Ventral surface pale with white spots.

Legs 1,2 spines weak but distinct. 3,4 spines strong, two dorsal tibial spines. Tm I = 0.85.

Palp (Figs. 411, 412). Form of conductor typical, the strong outward bend at the tip combined with a broad base being found in no other species. Embolus with large exposed loop.

FEMALE

Measurements

Carapace	length 2.50	width 1.58
Abdomen	length 3.00	width 1.92

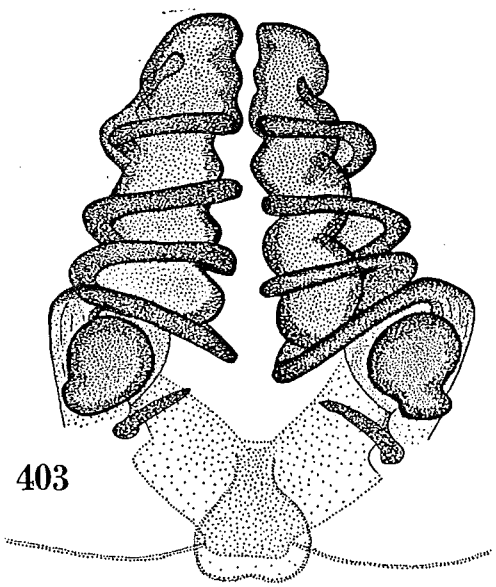
Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	1.75	0.58	1.60	1.46	0.83	6.22
2	1.58	0.58	1.46	1.25	0.75	5.62
3	1.42	0.58	1.17	1.17	0.67	5.01
4	1.75	0.58	1.60	1.60	0.92	6.45

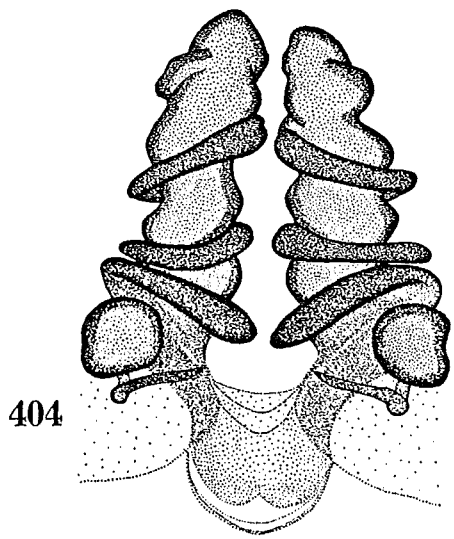
Colour Cephalothorax and chelicerae as in male. Legs as in male, but annulations slightly more distinct. Abdomen with lateral bands showing greater contrast (Fig. 410), otherwise as in male.

Legs 1,2 spines moderately developed, 3,4 spines strongly developed, two dorsal tibial spines. Tm I = 0.81.

Vulva Fig. 421.

Urquhart's type material in the Powell Collection consists of little more than a slurry of dismembered parts, and has no locality data. Despite this, the palps are quite well-preserved; they have been compared with those of the types of *Mynoglenes antipodiana* Berland, and with the only plausible *Mynoglenes* from recent collections from the Chatham Islands. In all cases the distinctive form of the paracymbium and conductor are quite clear, as well as the lateral and ventral profiles of the suprategulum. Neither Berland's nor Urquhart's females belong to the same species, the vulva of each clearly requiring a short embolus. A complication is introduced by the existence of a male from Canoe Creek Lagoon, Westland, which is indistinguishable from the Chatham Island males. Aside from the difficulty of accepting such a distribution, this specimen raises the possibility that Urquhart's material might in fact





Vulvae Fig. 403 *Mynoglenes mundenia* (Urquhart) Fig. 404 *M.horningi* n. sp.

have been collected from the mainland. The female abdomen which accompanied Urquhart's *rufocephalia* male was in poor condition, and the vulva partly disintegrated during preparation; it proved to be a distinctive species probably in *Pseudafroneta*. Careful search through more recent Chatham Islands collections revealed females of the same species, described below as *Pseudafroneta frigida*. It thus seems that Urquhart's species did, indeed, come from the Chatham Islands. One of the recent Chatham Island males together with a female from the same sample are described above. Simon's description of *Mynoglenes insolens* is uninformative, and, as Berland noted, he failed to mention the unusual shape of the embolus. However, Berland (1931) compared his *antipodiana* with Simon's *insolens*, and concluded that they were identical. Unfortunately, little weight can be attached to this identification, because Berland also supposed that fresh material which he received from the Auckland Islands belonged to the same species. Whereas his 1925 figures of *antipodiana* clearly show a broad conductor of the form found in *rufocephalia* and now confirmed as present in his Chatham Island specimen, his 1931 figure of the ventral aspect of the male palp shows a narrow, acuminate conductor of the kind found only in *mundenia*, *inexacta* and *horningi*; the latter species is the dominant member of the group in the Auckland Islands from whence the specimen derived. The identity of *M.insolens* with *M.rufocephalia* is nevertheless likely, because the only other *Mynoglenes* from the Chatham Islands, *M.tegulata* has a reduced palp of quite different form; it is, in fact, identical with Berland's female *antipodiana*. The type material of *insolens* in the Paris Museum is not available for comparison, but it has seemed safe to treat *insolens* here as a junior synonym of *rufocephalia*.

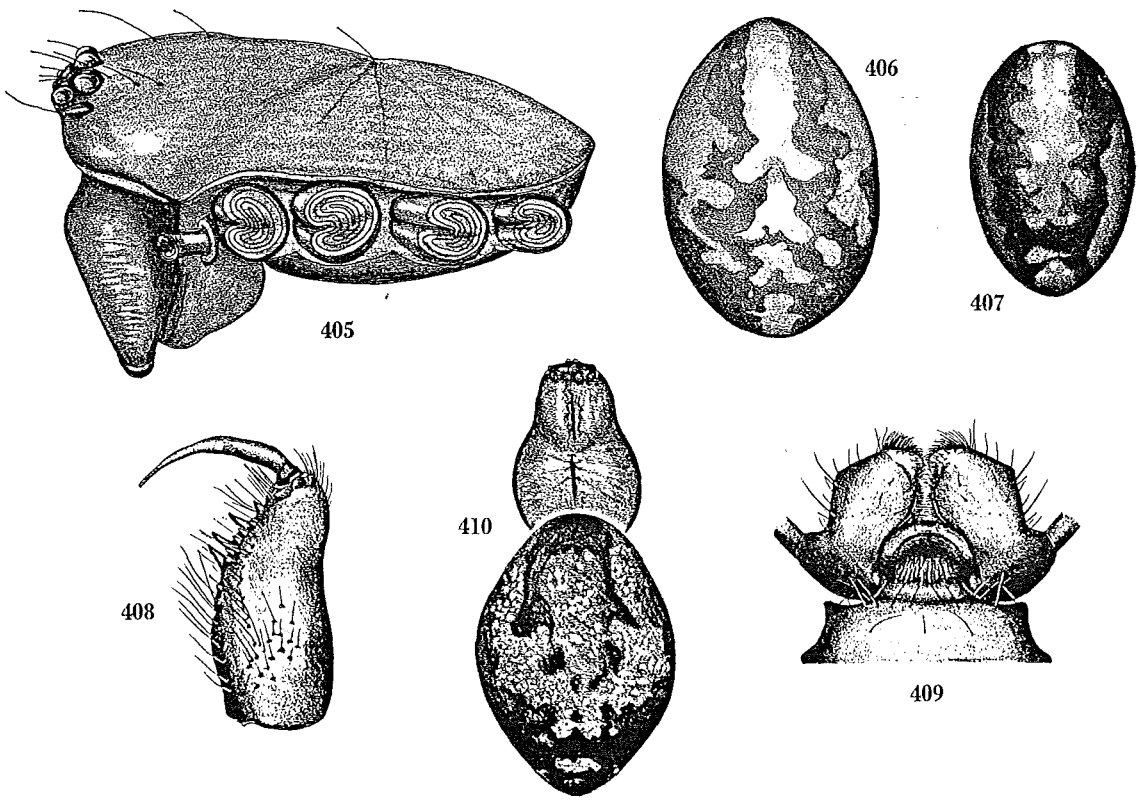
Types Holotype male; Urquhart collection, no data, re-labelled *Linyphia rufocephalia* Urquhart (Canterbury Museum). Topotype female; Port Hutt, Chatham Islands, in and under logs, Chatham Expedition, 9.ii.1954, R. R. Forster. Accompanying male figured here (Otago Museum).

Records Canoe Creek Lagoon, Westland, 10.i.1957, L. R. Jackson. Chatham Islands. Kaiangaroa, 28.i.1954, R.R.F. South-East Island, 2.ii.1954, R.R.F. Waitangi, 30.i.1954, R.R.F. Owenga, 2.v.1922, Young Collection. Mangere Island, 17.xi.1970, J. I. Townsend.

Mynoglenes diloris (Urquhart)

Linyphia diloris Urquhart 1886 Trans.N.Z.Inst. 18:184. *Paralinyphia diloris* (Urquhart) Bryant 1933
Rec. Cant. Mus. 4:17.

Figs. 397, 405-407, 413-414, 417-420



Figs. 405-407 *Mynoglenes diloris* (Urquhart) Fig. 405 carapace Fig. 406 female abdomen Fig. 407 male abdomen Fig. 408-409 *M.horningi* n. sp. Fig. 408 Male chelicerae, posterior face Fig. 409 Maxillae and labium, to show that the latter is re-bordered Fig. 410 *M.rufocephalia* (Urquhart) female carapace and abdomen

MALE

Measurements

Carapace	length 2.42	width 1.58
Abdomen	length 2.92	width 1.50

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	1.92	0.67	1.83	1.42	0.88	6.72
2	1.83	0.67	1.50	1.33	0.83	6.16
3	1.33	0.58	1.08	1.67	0.67	5.33
4	1.79	0.67	1.75	1.58	0.83	6.62

Colour Cephalothorax brown with darker striae, (Fig. 405). Chelicerae dark brown. Legs yellow-brown. Abdomen, Fig. 407; dark grey with paler median band and white spots. Ventral region with numerous small white spots in pale median band.

Legs 1, 2 spines very weak, almost hairs. 3,4 spines rather weak. Tm I = 0.71.

Palp Figs. 413,414. Requires to be distinguished from *M.fluviatilis* (see below). Embolus with large exposed loop, (Fig. 397).

FEMALE

Measurements

Carapace	length 2.42	width 1.58
Abdomen	length 3.33	width 1.83

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	2.08	0.67	1.83	1.42	0.92	6.92
2	1.83	0.67	1.58	1.33	0.83	6.24
3	1.58	0.58	1.17	1.25	0.75	5.33
4	2.00	0.67	1.75	1.50	0.92	6.84

Colour Cephalothorax and chelicerae as in male. Abdomen paler (Fig. 406), but pattern similar. Ventral region as in male.

Legs 1,2 spines present but weak; 3,4 spines moderately strong. Tm I = 0.73.

Vulva Figs. 417-420. Vulvae show much variation; in particular the receptacula can be directed either inwards towards the median line or outwards.

Types Syntypes in the Urquhart Collection, Te Karaka. Auckland, no date. A male has been designated as the selectotype. The material is in poor condition, and the male and female described here were from Kaikoura, North Canterbury, 28.ix.1974.

Records North Island. Northland. Houhora, from scrub 24.viii.1953, B. J. Marples. Bay of Plenty. Omaio Beach, 2.x.1969, C.L.W. Taranaki, Stratford, December 1975. Auckland. Rotorua, wasteland, 1.xii.1975, A.D.B. Rotorua, Blue Lake, grass roots along forest margin, 3.xii.1975, A.D.B. Rotorua, Blue Lakes, roots, forest margin 3.xii.1975, A.D.B. Ngaruawahia, sedge 21.vi.1974. Wairarapa. Mangareia, C.L.W. Bankview Stn., Te Wharau Rd., pitfall, 5-13.ix.1970, C.L.W. North Wairarapa, Hunua, pitfall, 1-8.x.1969, C.L.W. Wainuiora Rd., near Admiral Stn., 1.iv.1968, C.L.W. Manawatu, Feilding, 26.xii.1949, R.R.F. Wellington. Keith George Park, 14.viii.1953, G.W. Ramsay. Titahi Bay 31.xii.1942, F. Bodley. Days Bay, 31.xii.1942, R.R.F. South Island. Marlborough. Kaikoura, Keans Point 24-6.xii.1974, A.D.B. Kaikoura, under stones upper margin of shingle, 17.v.1974, A.D.B. Kaikoura, Kean Point, wood in grass, 23.xii.1974, A.D.B. Kaikoura Kean Point, grass and wood chippings, 23.xii.1974, A.D.B. Kean Point, 23.xii.1974, A.D.B. Kaikoura, grass and sedge, 24.xii.1974, A.D.B. Otago. Deep Dell, pitfall trap, (S43-0332), 15.v.1969, C.L.W. same locality, 25.x.1967, C.L.W. Allans Beach, swept from bracken, 30.iv.1953, B. J. Marples. Matanaka Beach, Waikouaiti, cliff face, 3.x.1968, C.L.W. R.R.F. Warrington 16.vi.1955, B. J. Marples. 3 miles west of Queenstown, 12.xi.1968, R.R.F. Westland. Fox Glacier, 1.ix.1951, M. Warren Arthurs Pass, Andrews Stream, soil under grass, 3.viii.1974, A.D.B. Hokitika, Ruatepu, under stones, 13.vii.1974, A.D.B. Otira Valley, moss, 28.v.1954, J. S. Dugdale. Fiordland Cascade Creek, in *Raoulia*, 16.i.1975, A.D.B. Nelson. Parkes Farm. Ida Valley, Nelson (S20-369), 24.viii.1971, N.A. Martin.

Mynoglenes fluviatilis n.sp.

Figs. 415-416, 422.

MALE

Measurements

Carapace	length 2.75	width 1.67
Abdomen	length 3.33	width 1.67

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	2.42	0.75	2.08	2.00	1.00	8.25
2	2.00	0.75	1.75	1.67	0.83	7.00
3	1.50	0.58	1.33	1.42	0.75	5.58
4	2.17	0.75	2.00	2.08	1.17	8.17

Colour Colour pattern indistinguishable from the male of *M. diloris.*

Legs 1,2 spines weak. 3,4 spines moderately strong. Tm 1 = 0.71

Palp Figs. 415, 416. Very close to *M. diloris.*
The tegular prominence, however, is a rounded knob, whereas in *diloris* it is smaller, subacute, and directed slightly downwards. The distal third of the conductor, seen in ventral aspect, differs from that of *diloris*, but needs careful examination. Exposed loop of embolus large. Suprategulum more sinuous and broader at the base than in *diloris.*

FEMALE

Measurements

Carapace	length 2.33	width 1.67
Abdomen	length 4.00	width 2.33

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	2.00	0.58	1.75	1.67	0.92	6.92
2	1.75	0.58	1.50	1.50	0.92	6.25
3	1.50	0.58	1.17	1.25	0.71	5.21
4	1.92	0.58	1.83	1.75	0.92	7.00

Colour Pattern indistinguishable from *diloris* female.

Legs 1,2 spines moderately strong. 3,4 spines strong. Tm 1 = 0.72

Vulva Fig. 422. Not certainly distinguishable from *M. diloris*, although the components may prove to be somewhat larger and more strongly sclerotised.

This species is close to *diloris.* It was found, however, beneath stones bordering Cascade Creek, building its web over gently flowing water in the same manner as *M. major* and *M. titan. Diloris* has not been seen to invade this habitat, even when large populations are present in adjacent herbage. Conversely, *M.fluviatilis* was not observed in low herbage and *Raoulia* mats adjacent to the creek, that niche being occupied by *M.paradoxa* and *M.diloris.* Examination of samples of *diloris* extending from Ngaruawahia, North Island to southern regions of South Island, including Fiordland have revealed no

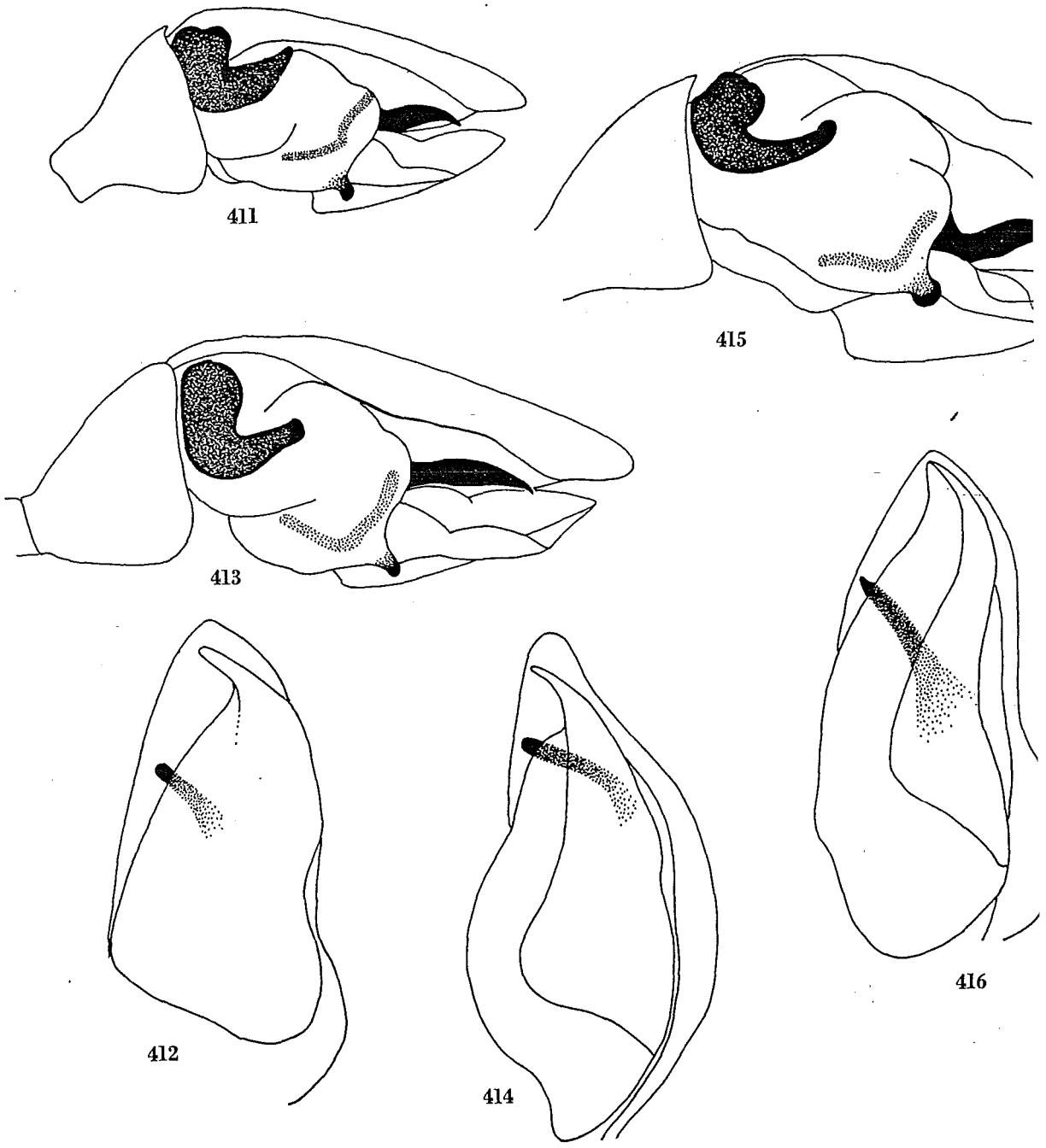
overlap in the form of the conductor, suprategulum and tegular prominence with those of the same structures in males of *fluviatilis*. The behaviour of *fluviatilis* also resembles that of *M.major* and *M.titan*, in that it is an active spider, adept at scuttling into crevices when disturbed. These grounds justify its description as a separate species.

Types Holotype male; allotype female; Cascade Creek, Fiordland, 16-19.i.1975,A.D.B., a single male paratype and female paratypes in sample (Otago Museum).

Records Arthur's Pass, Bealey River, und 9.viii.1974 and 4.viii.1974. McGrath's 8.vii.1974,A.D.B.

The specimens from Arthur's Pass hav tegular prominences than those from Fiord are in other respects identical.

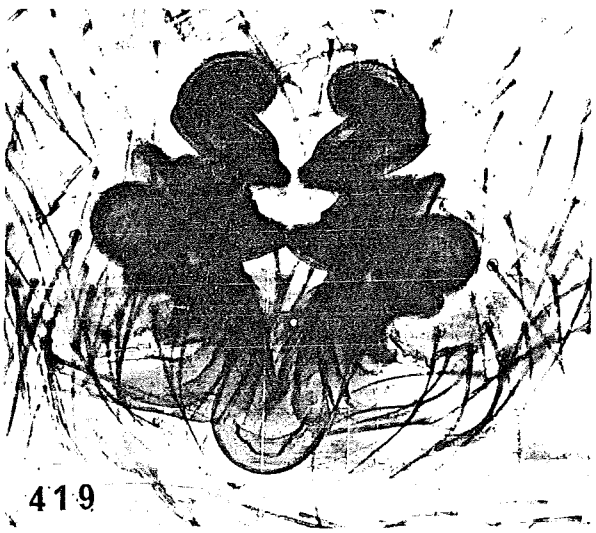
GROUP IV.



Mynoglenes palps Figs. 411,412 *M.rufocephalia* (Urquhart) Figs. 413,414 *M.diloris* (Urquhart) Figs. 415,416 *M.fluviatil*

417

418



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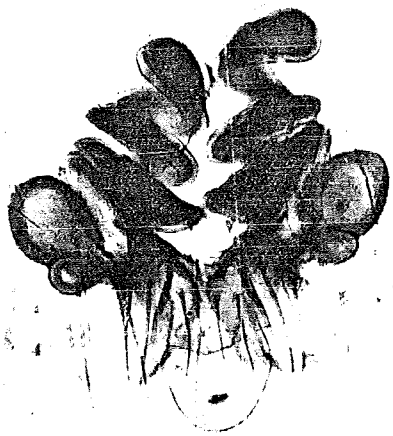

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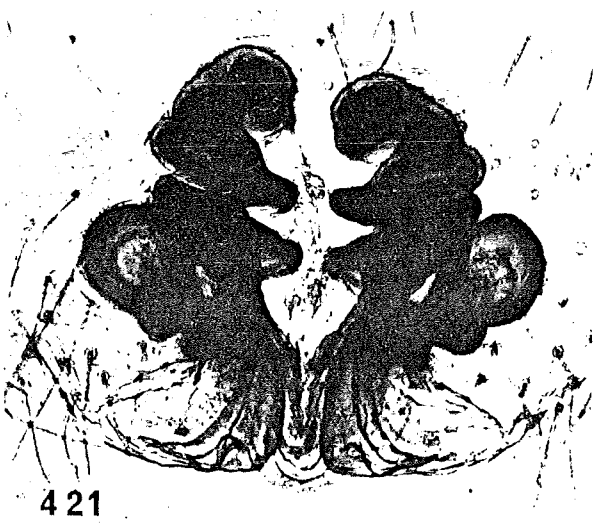

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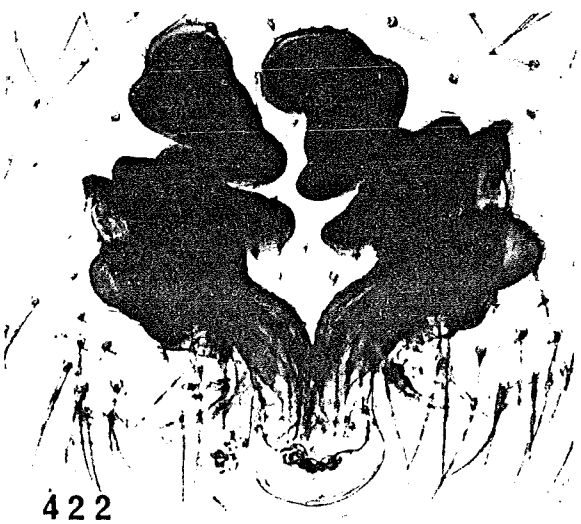


422

Vulvae Figs. 417-420 *Mynoglenes diloris* (Urquhart) Fig. 417 Kaikoura Fig. 418 Arthur's Pass Fig. 419 Kaikoura Fig. 420 Arthur's Pass, Andrew's Stream Fig. 421 *M.rufocephalia* (Urquhart) Fig. 422 *M.fluviatilis* n. sp.

Mynoglenes silvicola n.sp.

Figs. 423-425, 440

MALE (holotype)

Measurements

Carapace	length 2.17	width 1.50	
Abdomen	length 2.00	width (damaged)	

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	2.08	0.67	1.92	1.83	1.00	7.50
2	1.75	0.58	1.75	1.50	0.92	6.50
3	1.33	0.42	0.83	1.00	0.83	4.41
4	2.08	0.58	1.83	1.83	0.92	7.24

Colour Carapace, chelicerae, dark brown, legs brown with dark annulae. Abdomen with a dark folium with a lighter median area decorated with numerous white spots.

Legs 1,2,3,4 all spines moderately strong. Tm 1 = 0.65.

Palp Fig. 423. The conductor is distorted, and the ventral aspect is not given from this specimen.
This specimen appears to have desiccated during storage, and is damaged; in addition, the left palpal organ is badly deformed. It is designated as the holotype because of its association with females in the same sample. The only other male is a single individual from the Mount Arthur Track, Nelson. Despite small differences in the chaetotaxy, careful comparison shows that the suprategula of the two specimens are identical, and that small differences between the other palpal components are no more than might be expected to result from the drying out of the holotype. A description of the Mount Arthur specimen is given below.

MALE (Mount Arthur specimen)

Measurements

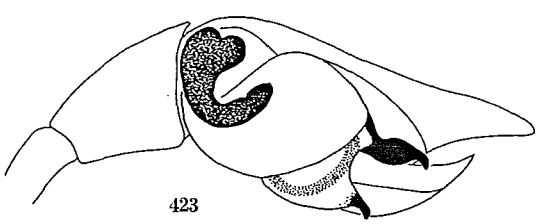
Carapace	length 1.92	width 1.25	
Abdomen	length 1.92	width 1.17	

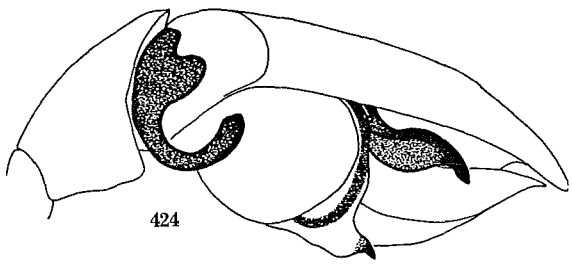
Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	1.58	0.50	1.75	1.33	0.83	5.99
2	1.50	0.50	1.42	1.33	0.83	5.58
3	1.33	0.50	1.00	1.17	0.67	4.67
4	1.83	0.42	1.58	1.58	0.92	6.33

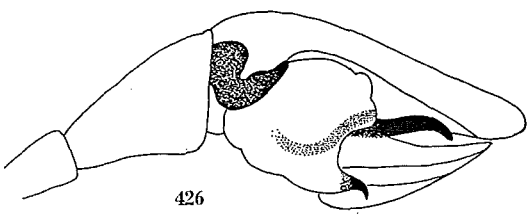
Colour Cephalothorax, chelicerae and legs yellow-brown. Abdomen with poorly-defined dorsal folium with a broad, paler median stripe and numerous white spots. Ventral region with dense white spotting.

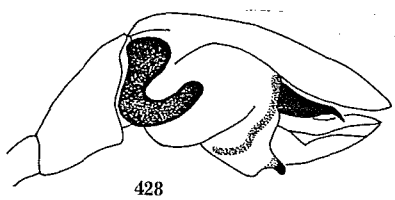
Legs 1,2 all spines weak, almost reduced to hairs. 3,4 all spines moderately strong. Tm 1 = 0.71.

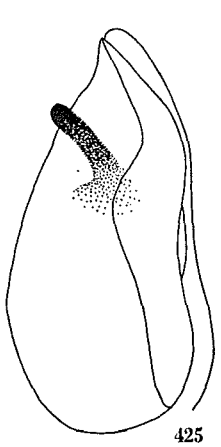
Palp Figs. 424,425.

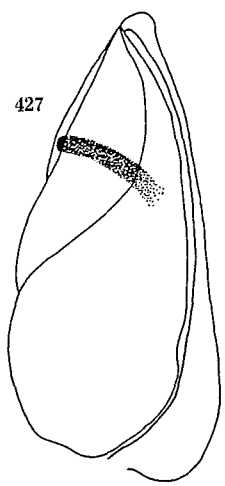


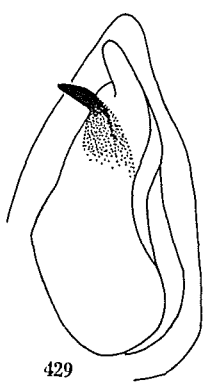


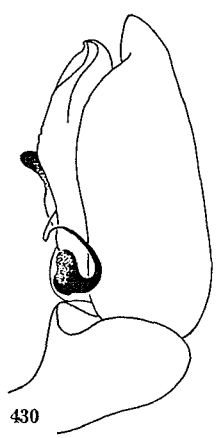




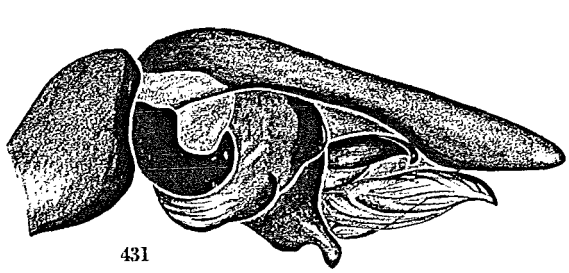


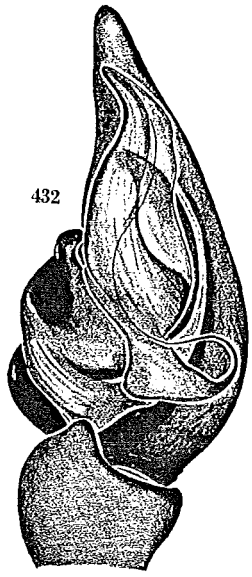


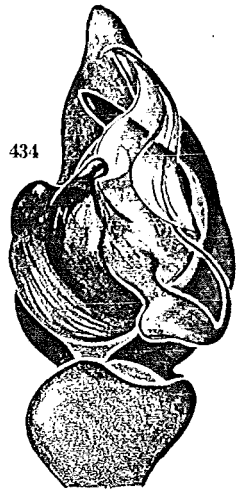


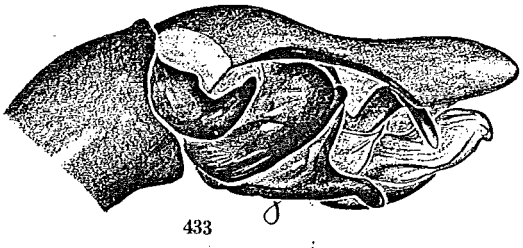


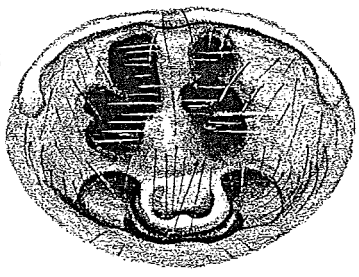
Figs. 423-425. *Mynoglenes silvicola* n. sp. Fig. 423 Mount Balloon Figs. 424,425 Mount Arthur Track Figs. 426,427 *M.paradoxa* n. sp. Figs. 428-429 *M.similis* n. sp. Fig. 430 *M.contorta*, palp from inner lateral aspect

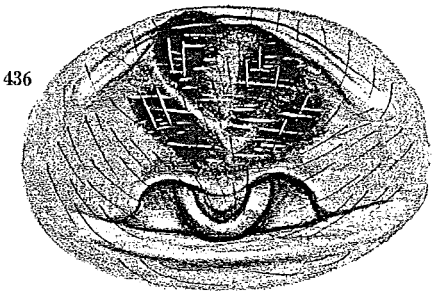












Figs. 431-436 *Mynoglenes* palps. Figs. 431,432 *M.titan n. sp.* Figs. 433,434 *M.contorta* n.s sp. Fig. 435 *M.titan* epigynum fig. 436 *M.major* n. sp. Epigynum

FEMALE

Measurements

Carapace	length 2.00		width 1.66
Abdomen	length 2.58		width 1.67

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	2.33	0.58	1.92	1.75	1.00	7.58
2	2.00	0.58	1.67	1.50	0.83	6.58
3	1.67	0.50	1.50	1.50	0.75	5.92
4	2.25	0.58	1.92	1.92	1.00	7.67

Colour As in male

Legs 1,2,3,4 all spines moderately strong Tm = 0.73.

Vulva Fig. 440. The long scape is distinctive.

Types Holotype male, allotype female, female paratypes: Mount Balloon, at hut, under logs and in leaf mould, 26.i.48 R. R. Forster and R. K. Dell (National Museum).

Records Nelson, Mount Arthur Track 4000 ft. 22.i.48 R.R.F.

Mynoglenes titan n. sp.

Figs. 362-364, 431-432, 435, 441.

MALE

Measurements

Carapace	length 4.33		width 2.67
Abdomen	length 4.67		width 2.50

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	4.00	1.25	3.75	3.42	1.50	13.92
2	3.33	1.16	3.33	2.92	1.42	12.16
3	2.83	1.00	2.33	2.58	1.00	9.74
4	3.42	1.00	3.58	3.50	1.54	13.04

Colour Cephalothorax, chelicerae and legs, dark brown, legs with a pattern of very faint annulations. Abdomen brown, with an obscure chevron pattern laterally, and some anterior whitish spots. The spiders have a typical, elongated appearance.

Legs Femur 1 with one prolateral and one dorsal spine. 2,3,4 femora with single dorsal spines. Tm 1 = 0.74. 1,2 dorsal spines reduced to hairs, ventral spines weak.

Palp Figs. 431,432. Exposed loop of embolus small.

FEMALE

Measurements

Carapace length 3.33 width 2.17
Abdomen length 4.58 width 2.75

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	3.33	1.00	3.08	2.92	1.42	11.75
2	2.75	0.92	2.58	2.67	1.42	10.34
3	2.50	0.83	2.08	2.25	1.08	8.74
4	3.33	0.92	2.75	2.83	1.50	11.33

Colour As in male

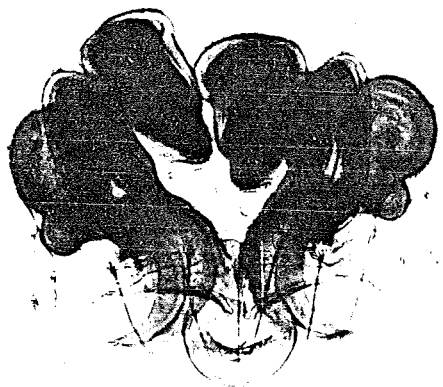
Legs Chaetotaxy as for male, but 1,2 spines weak but not hair-like, and 3.4 spines moderately strong. Tm 1 = 0.71.

Genitalia Figs. 435, 441

Types Holotype male, allotype female: Kaituna Stream, Bank's Peninsula, Canterbury, beneath stones on creek bed, 1.ii.75. One paratype male, same data, A.D.B. (Otago Museum).

Records Fraser's Gulley, Dunedin 17.v.69 C.L.W. Cannington Road, Dunedin, 7.xii.74, A.D.B. Old Man Range, 1423 m, in stream in bog, 20.ii.74, J.S. Dugdale. Rock and Pillar Range, West of Middlemarch, pitfall trap, 3500 ft. 1.xii.68, J. Child. Governor's Bay, Bank's Peninsula, Canterbury, 22.i.49, W.R. Cresswell. Kaituna Valley, Bank's Peninsula, 24.v.52, A.D.B. Ribbonwood Creek, Cass, 21.v.54 Okuku Pass, 6.iv.52, J.S. Dugdale Ruakakapatuna Valley, Wairarapa, in cave, 24.v.52 J.T. Salmon.

M.titan is unusual in its femoral spination, which resembles that of most *Pseudafroneta*. In other respects it is a typical *Mynoglenes*, specialised for its creek-bed habitat. The spiders spin tenuous sheet-webs over the surface of running water in densely-shaded habitats, using corners of the webs which extend into rock-crevices or under stones as hid-



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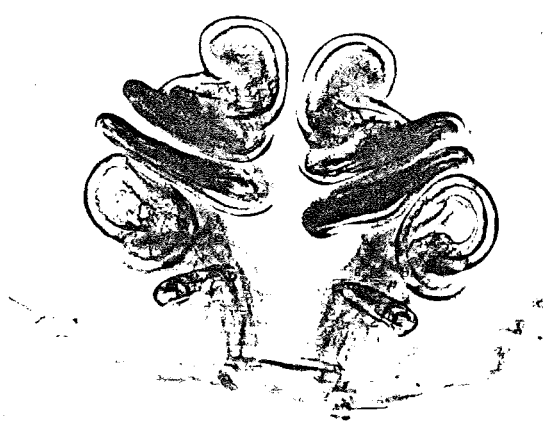

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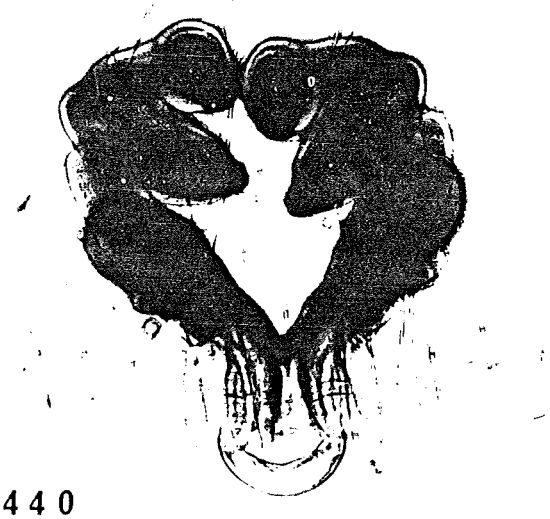


440

Vulvae Fig. 437 *Mynoglenes similis* n. sp. Figs. 438,439 *M.paradoxa* n. sp. Fig. 438 female allotype Fig. 439 paratype Fig. 440 *M.silvicola*

ing-places. They are fast-moving, and run rapidly to concealment when disturbed; sometimes they launch themselves onto the water-surface and allow themselves to be carried passively downstream by the current. Pairs may often be found resting close together on the undersides of stones. The egg-sacs are large, flat, plano-convex discs attached to the under-surface of rocks. When streams whose beds they inhabit are in spate, the spiders are to be found in wet detritus in the splash-zone.

Mynoglenes paradoxa n. sp.

Figs. 426-427, 438-439.

MALE

Measurements

Carapace	length 2.25		width 1.50	
Abdomen	length 2.75		width 1.50	

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	1.83	0.67	1.67	1.42	0.83	6.42
2	1.67	0.58	1.42	1.17	0.67	5.51
3	1.33	0.42	1.17	1.08	0.58	4.58
4	1.75	0.58	1.67	1.50	0.83	6.33

Colour Cephalothorax, chelicerae, legs, yellow-brown. Abdomen grey, with weak dorsal folium reduced to two lines of darker, confluent blotches bordered by white spots. Ventral region grey without white spots.

Legs 1,2 spines weak, 3,4 spines strong. Tm 1 = 0.63.

Palp
Figs. 426,427.

FEMALE

Measurements

Carapace	length 2.25	width 1.25	
Abdomen	length 2.67	width 1.50	

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	1.50	0.50	1.33	1.17	0.92	5.42
2	1.42	0.50	1.17	1.17	0.75	5.01
3	1.25	0.42	0.83	0.92	0.92	4.34
4	1.58	0.50	1.42	1.25	0.83	5.58

Colour As in male.

Legs 1,2 spines moderately strong. 3,4 spines strong. Tm 1 = 0.58.

Vulva Fig. 438 (allotype), 439 (paratype).

Types Holotype male, allotype female: Cascade Creek, Fiordland, *Raoulia* mats, 16-17.i.75,A.D.B. (Otago Museum). Male and female paratypes.

Records Fiordland, divide below Key Summit in tree-fern detritus, 12.ii.75,A.D.B.

Mynoglenes contorta n. sp.

Figs. 430,433-434.

MALE

Measurements

Carapace	length 2.67	width 1.79	
Abdomen (damaged)	–	–	

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	2.50	0.83	2.21	2.00	1.17	8.71
2	2.33	0.83	2.00	1.83	1.00	7.99
3	1.83	0.63	1.46	1.67	0.83	6.42
4	2.33	0.83	2.08	2.17	1.08	8.49

Colour Cephalothorax and chelicerae pale brown. Legs yellow. The abdomen of the unique specimen is damaged; the portion of the dorsal region remaining is grey with some white spots.

Legs 1,2 spines very weak, except for a strong ventral spine on both tibiae. 3,4 spines strong. Tm 1 = 0.73.

Palp Figs. 430,433,434. The highly developed suprategulum, very large, forwardly-directed tegular prominence and unusual conductor are not found in any other species. Exposed loop of embolus very short (Figs. 430,434).

Type Holotype male: Cobb River Dam, 24.ix.60 (Ent. Div. D.S.I.R.)

Mynoglenes similis n. sp.

Figs. 428-429, 437

MALE

Measurements

Carapace	length 1.52	width 1.08	
Abdomen	length 1.52	width 0.80	

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	1.24	0.44	1.12	0.92	0.64	4.66
2	1.24	0.44	1.08	0.84	0.60	4.20
3	1.00	0.40	0.72	0.64	0.52	3.28
4	1.24	0.40	1.16	1.00	0.72	4.52

Colour Cephalothorax, chelicerae and legs yellow-brown. Legs with very faint annulae. Abdomen grey with poorly-defined folium, ventral region grey without white spots.

Legs 1,2 spines moderately strong. 3,4 spines strong. Tm I = 0.69.

Palp Figs. 428,429.

FEMALE

Measurements

Carapace	length 1.60	width 1.00	
Abdomen (detached).	length 2.40	width 1.72	

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	1.36	0.48	1.16	1.00	0.68	4.68
2	1.20	0.44	1.00	0.92	0.64	4.20
3	1.04	0.40	0.76	0.84	0.56	3.60
4	1.40	0.44	1.12	1.12	1.04	0.72

Colour As in male.

Legs 1,2,3,4 all spines strong. Tm I = 0.74.

Vulva Fig. 437.

Types Holotype male, allotype female: Canterbury, Peel Forest, 30.ix.66, R.R.F. and C.L.W. (Otago Museum).

Records Canterbury: Peel Forest, 21.i.51, R.R.F. Westland: Fergusons Bush, 28.ix.66, R.R.F., C.L.W.

GROUP V.

Mynoglenes major n. sp.

Figs. 436,442,445-446.

MALE

Measurements

Carapace	length 2.67	width 1.67	
Abdomen	length 2.92	width 1.50	

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	2.08	0.75	1.92	1.67	0.92	7.93
2	1.92	0.67	1.75	1.50	0.83	6.67
3	1.58	0.58	1.17	1.33	0.67	5.33
4	2.00	0.67	1.83	1.75	1.00	7.25

Colour Cephalothorax, chelicerae and legs brown, legs with faint annulae. Abdomen grey with poorly-defined dorsal folium with a paler median stripe and some white spots. Ventral region grey with white spots.

Legs 1,2,3,4 spines moderately strong, slightly weaker on 1,2. Tm I = 0.76.

Palp Figs. 445,446.

FEMALE

Measurements

Carapace length 2.42 width 1.67
Abdomen length 3.75 width 2.33

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	1.83	0.58	1.75	1.58	0.83	6.57
2	1.83	0.54	1.33	1.58	0.83	6.11
3	1.17	0.50	1.17	1.25	0.67	4.76
4	1.67	0.58	1.67	1.58	0.83	6.33

Colour As in male.

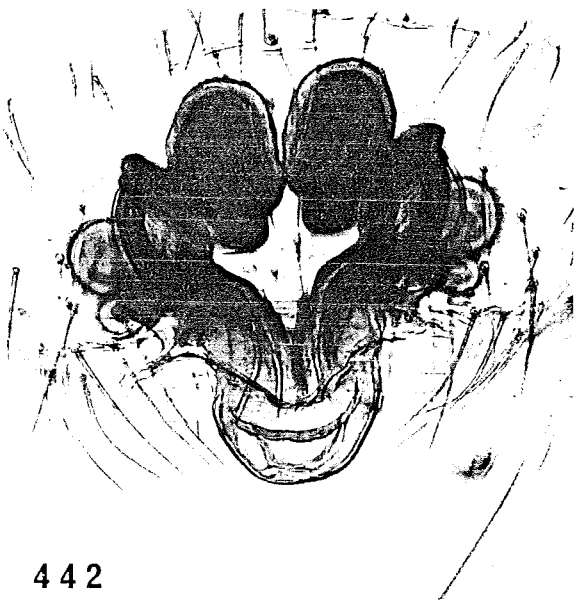
Legs As in male. Tm I = 0.71.

Genitalia Figs. 436,442.

Types Holotype male, allotype female: Canterbury, Banks Peninsula, Kaituna Stream, 1.ii.75, A.D.B. (Otago Museum).

Records North Island. Auckland, 30.xi.58, J. Wise, Fantham's Rock, Mt. Egmont, 6500', 16.i.55, G. W. Ramsay. Between Napier and Wairoa, xii.10, W. Wolfe. South Island. Kaikoura, Clinton R. 25-28.xii.74, A.D.B. Canterbury, Kaituna Valley, Banks Peninsula, 1.xii.74, A.D.B. Goose Bay, 2.vi.52, Canterbury Field Club. Arthurs Pass, Bealey River, 9.viii.74, A.D.B. Te Ore Ore, Black Rock Rd, 16.ix.67, C.L.W. Moana, 10.iii.50, R.R.F. Chalk Hill, 4.ii.51, R.R.F. Okuku Pass, 6.iv.52, J. S. Dugdale. Henderson Valley, Long Creek, Hapuka River, 26.xii.74, A.D.B. Mason River, Waiu, 30.xii.74, A.D.B. Blue Duck Creek, Hapuka River,

441



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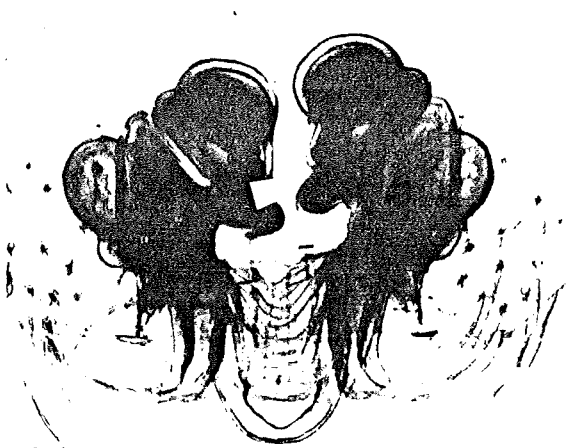
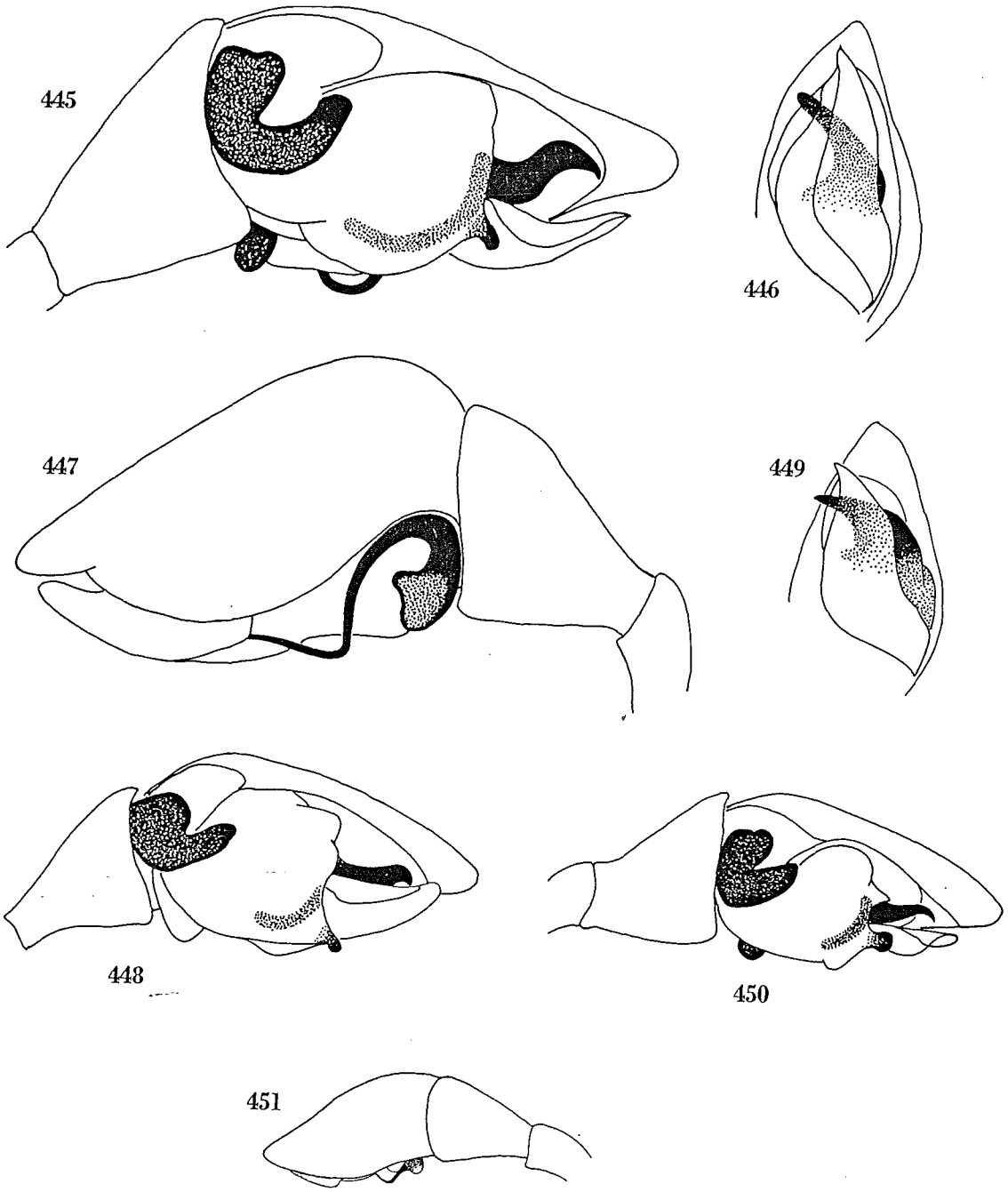


443

444

Vulvae Fig. 441 *Mynoglenes titan* n. sp. Fig. 442 *M.major* n. sp. Fig. 443 *M.rupicola* n. sp. Fig. 444 *M.fucatina* (Urquhart)



Figs. 445-451 *Mynoglenes*, palps. Figs. 445-446 *M.major* n. sp. Fig. 447 *M.major* n. sp. inner lateral aspect Figs. 448-449 *Mynoglenes abbreviata* n. sp. Figs. 450,451 *M.fucatina* (Urquhart)

24.xii.74, A.D.B. *M.major* lives at the margins of creek-beds, making its webs in association with running water in the same manner as *M.titan*. The creeks it occupies, however, may be either open or shaded, whereas the latter species appears only to be associated with sheltered habitats. The single record from 6500', on Mount Egmont is surprising, although I have females probably attributable to this species from Taranaki at sea-level. There is, however, no doubt as to the identification.

Mynoglenes abbreviata n. sp.

Figs. 448-449

MALE

Measurements

Carapace	length 1.80	width 1.20
Abdomen		shrivelled

Colour Probably similar to *M.major*. The only two specimens had dried out, and are in poor condition.

Palp Figs. 448-449. *M.abbreviata* is close to *M.major*, but the shorter suprategulum cannot be accounted for by desiccation, and it is undoubtedly a distinct species.

Types Holotype male: Coromandel, Thames Valley, Kaueranga, 15-18.i.71, H. R. Oliver (Otago Museum). Paratype male.

Mynoglenes fucatina (Urquhart)

Linyphia fucatina Urquhart. 1894 Trans. N.Z. Inst. 26:209

Paralinyphia fucatina (Urquhart) Bryant 1933 Rec.Cant.Mus. 6 (1):17

Figs. 450-451,444

MALE

Measurements

Carapace	length 1.48	width 1.00	
Abdomen	length 1.48	width 0.88	

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	1.04	0.40	1.00	0.84	0.56	3.84
2	0.92	0.40	0.75	0.72	0.48	3.27
3	0.76	0.36	0.56	0.64	0.80	3.12
4	1.00	0.40	0.96	0.80	0.56	3.72

Colour Cephalothorax dark brown. Legs annulated, black and dusky yellow, Tibia I black with a yellow basal band. Abdomen black, with an anterior white band delimiting the folium, and two longitudinal rows of white spots. Ventral region black.

Legs 1,2 spines weak, reduced to hairs. 3.4 spines rather weak; metatarsi with apical spines only. Tm I = 0.63. Trichobothria long and slender.

Palp Fig. 450,451. Embolus stout, with very small exposed loop only. Tegulum with an acute projection dorsal to the tegular prominence.

FEMALE

Measurements

Carapace	length 1.44	width 0.96	
Abdomen	length 1.80	width 1.12	

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	1.00	0.36	0.84	0.75	0.56	3.51
2	0.84	0.36	0.72	0.70	0.52	3.14
3	1.58	0.28	0.58	0.60	0.44	3.48
4	1.00	0.36	0.96	0.84	0.56	3.72

Colour Cephalothorax and legs as for male, but the darkening of Tibia I is less intense, and it may have a pale central band as well as at the base. Abdomen with a dark grey folium outlined by white spots with a paler central band, and two longitudinal rows of white spots. Ventral region grey with two darker lateral lines.

Legs As for the male, but 1.2 spines stronger, less hair-like. Tm I = 0.58.

Vulva Fig. 444.

Types Syntype males in Urquhart collection, Canterbury Museum, no data. They consist of blackened fragments only, but the palps show, recognisably, the stout embolus and the second tegular process. The specimens described and illustrated here were from *Raoulia* mats at Rough Creek, Arthurs Pass, Canterbury. 12.xii.74, A. D. Blest.

Records North Island. Mount Ruapehu, Whakapapanui Dam, under stones by river, 13.i.67, K. A. J. Wise. Manawatu, Totara Reserve, 6.xii.66, R.R.F. Wairarapa. 3 miles south of Eketahuna Highway, pitfall trap, 1-8.x.69, C.L.W. Canterbury. Arthurs Pass, Rough Creek, *Raoulia*, 2-4.viii.74, A.D.B. Bealey River, *Raoulia*, 4-9.viii.74, A.D.B. Otago. Naseby-Dansey Pass Roads (S33-9272), 15.i.69, pitfall, C.L.W. Allans Beach, salt meadow, 16.iv.53, B. J. Marples.

M. fucatina is the least typical *Mynoglenes*, and illustrates the problems involved in delimiting the genus. The absence of non-apical metatarsal spines is unusual, but although in this respect it resembles *Promynoglenes*, it is clear from the genitalia that it is quite unrelated to that genus. The palp is very close to that of *M.major*, sharing the stout embolus, but *major* is in most respects a fairly typical *Mynoglenes*. *M.fucatina* appears specialised for life in the interstices of *Raoulia* mats and at Arthurs Pass may be found in that habitat in great abundance. In life the first pair of legs is held forwards, giving the spider a characteristic elongated appearance.

Mynoglenes rupicola n. sp.

Fig. 443

FEMALE

Measurements

Carapace	length 1.75	width 1.25
Abdomen	length 2.33	width 1.33

Colour Cephalothorax, chelicerae and legs greyish-yellow. Abdomen dark grey broken by paler blotches.

Legs Spines typical of genus. Tm I = 0.59.

Vulva Fig. 443. The epigyne is barely distinguishable from *M.major*. The bursae and receptacula of *M.rupicola* are quite distinct, and the scape when mounted can be seen to be different.

Types Holotype female: Canterbury, Arthur's Pass, Temple Basin under stones amongst *Dracophyllum*, 4500ft., 24.xi.74, A. D. Blest (Otago Museum). One female paratype.

The two specimens were taken on arid ground some distance from water. This, together with the much lower value of Tm I and the vulval characters noted above justifies the description of *M.rupicola* as a species distinct from *M.major*.

GROUP VI

Mynoglenes redacta n. sp.

Figs. 452,458

MALE

Measurements

Carapace	length 3.08	width 2.08	
Abdomen	length 2.91	width 1.67	

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	2.50	0.83	2.33	1.83	1.08	8.57
2	2.42	0.83	2.00	1.83	1.08	8.16
3	2.08	0.67	1.50	1.58	0.92	6.75
4	2.50	0.83	2.25	1.83	1.08	8.49

Colour Cephalothorax, chelicerae and legs pale yellow (specimen recently moulted). Abdomen with dark dorsal folium broken into lateral blotches on a light ground, with lateral white spots. Two lateral dark stripes, ventral region pale.

Legs All spines moderately strong. Tibia IV with supernumerary ventral spines, Tm I = 0.89.

Palp Fig. 452.

FEMALE

Measurements

Carapace	length 2.67	width 1.83	
Abdomen	length 3.33	width 1.67	

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	2.42	0.83	2.16	2.00	1.17	8.58
2	2.25	0.83	1.83	1.83	1.00	7.74
3	1.58	0.75	1.58	1.50	0.83	6.24
4	2.58	0.83	2.50	2.42	1.17	9.50

Colour As for male, but carapace, chelicerae and legs chestnut brown.

Legs As for male. Tm I = 0.79.

Vulva Fig. 458.

Types Holotype male, allotype female: Auckland Islands, Tucker Point, Port Ross, 28.i.66. R. G. Ordish. Paratype from same locality.

Records Snares Island. Sinkhole Flat, in stony beach, high eulittoral – low supralittoral, 20.xii.74, C. J. Horning. Sinkhole Flat, in boulder beach at low supralittoral 29.ii.72, D. S. Horning. Sinkhole area, litter of *Olearia lyallii,* 27.vii.72, D.S.H. Penguin Colony in *Olearia* under debris, 28.i.61, I. Mannering. Penguin Colony, in occupied burrows *Puffinus griseus,* 19.ii.75, C.J.H. Penguin Creek, Colony, in occupied burrows *Puffinus griseus,* 19.ii.75, C.J.H. Penguin Colony 16, E. end Sinkhole Flat. In peat under *Stilbocarpa robusta* at colony edge. 3.xii.74. Under rocks in rookery. 30.xii.74. In peat under *Stilbocarpa robusta* at colony edge, 4.xii.74, C.J.H. Colony 3 clearing, 6.xii.72, dead leaves *Carex trifida,* C.J.H. Penguin Creek in wet litter *Olearia lyalli* 26.x.72, D.S.H. Colony 40 Penguin Creek, in occupied burrows *Puffinus griseus* 19.ii.75, C.J.H. Skua Point, under mats *Tillaea moschata* supralittoral zone 2.iii.75, D.S.H. Skua Point, beating live foliage *Hebe elliptica* 16.i.75, C.J.H. Biological Stn. among dead leaves *Carex trifida.* 2.xii.72, C.J.H. Biological Stn. 1.xi.72, C.J.H. Biological Stn. Litter of *Carex trifida* 26.i.71, D.S.H. Biological Stn. in upper hut. 26.xii.74, C.J.H. Signpost Hill, litter *Stilbocarpa robusta* 26.x.72, D.S.H. Ranui, Auckland Is. in *Metrosideros* litter 7.ii.73, J. Farrell. Tagua bay, Carnley Harbour, Auckland Is. litter 73/91, 11.ii.73, J S. Dugdale.

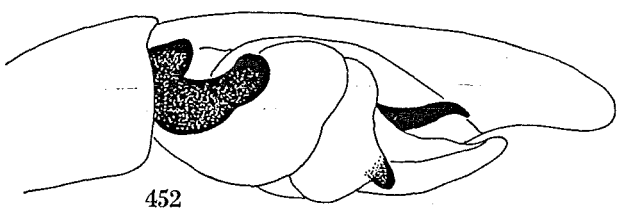
Mynoglenes banksi n. sp.

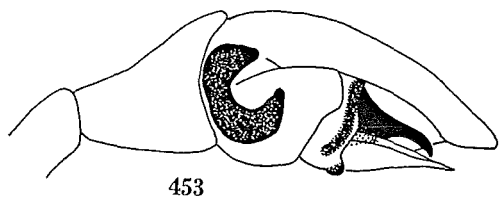
Figs. 454-455, 459.

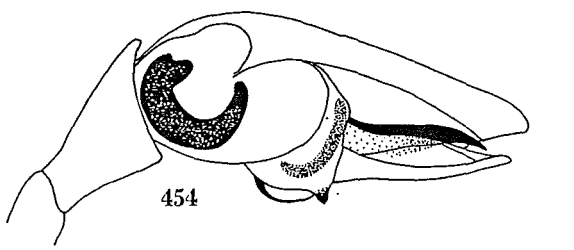
MALE

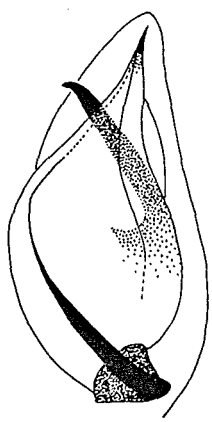
Measurements

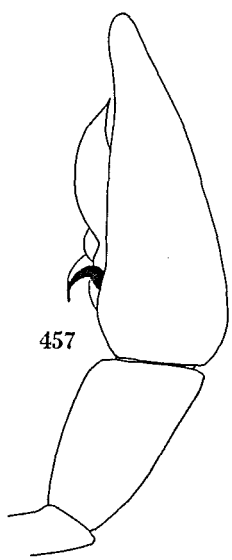
Carapace	length 1.44	width 1.04
Abdomen	length 1.68	width 0.88











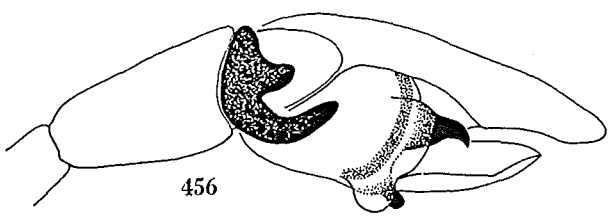
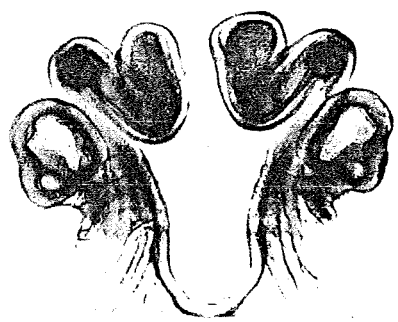


Fig. 452 *Mynoglenes redacta* n. sp. Fig. 453 *M.brevipes* n. sp. Figs. 454,455 *M.banksi* n. sp. Fig. 456-457 *M.tegulata* n. sp.

458

459



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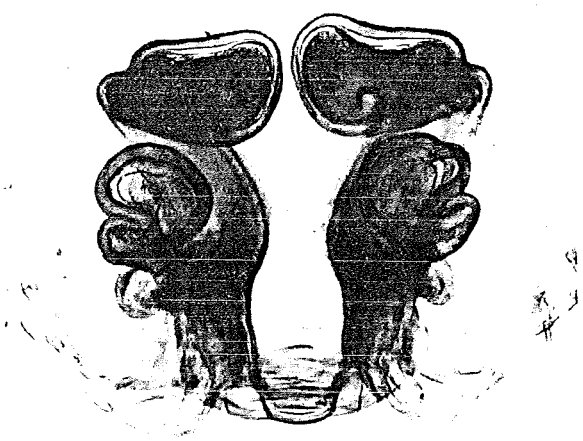

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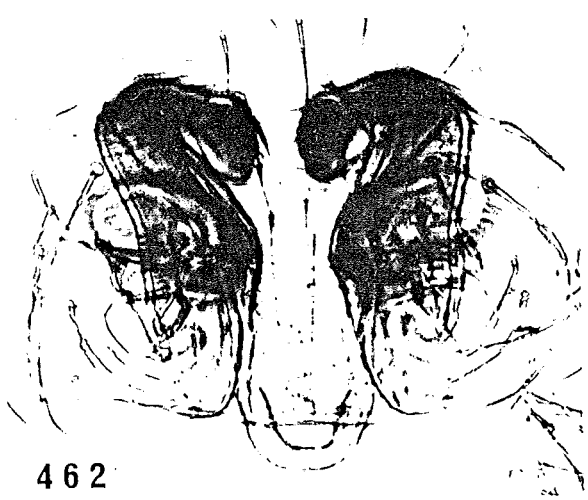

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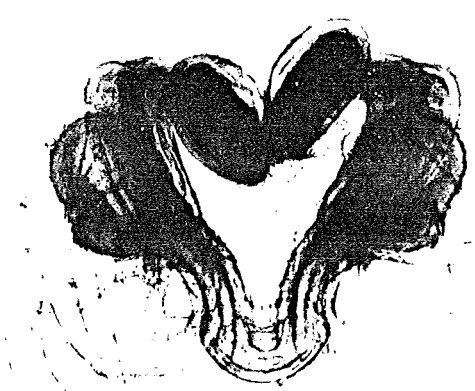


463

Vulvae Fig. 458 *Mynoglenes redacta* n. sp. Fig. 459 *Mynoglenes banksi* n. sp. Fig. 460 *Mynoglenes brevipes* n. sp. Fig. 461 *Mynoglenes dunstani* n. sp. Fig. 462 *Mynoglenes insignis* n. sp. Fig. 463 *Mynoglenes tegulata* n. sp.

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	1.08	0.40	0.92	0.72	0.52	3.64
2	0.88	0.36	0.76	0.72	0.48	3.20
3	0.72	0.36	0.56	0.60	0.40	2.64
4	0.96	0.36	0.92	0.76	0.56	3.56

Colour Cephalothorax, chelicerae and legs dusky brown. Legs with dark annulae. Abdomen with blackish folium with paler median stripe and an anterior median white blotch.

Legs 1,2 spines weak, almost reduced to hairs. 3.4 spines strong. Tm 1 = 0.62.

Palp Figs. 454,455. The suprategulum is unusually long, and the basal part of the embolus strap-shaped.

FEMALE

Measurements

Carapace	length 1.83	width 1.25
Abdomen	length 2.91	width 1.67

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	1.36	0.48	1.08	1.58	0.56	5.06
2	1.20	0.48	1.00	0.80	0.52	4.00
3	1.04	0.40	0.80	0.80	0.52	3.56
4	1.40	0.48	1.20	1.08	0.60	4.76

Colour As in the male.

Legs 1,2 spines moderately strong. 3,4 spines strong. Tm 1 = 0.69.

Vulva Fig. 459.

Types Holotype male: Canterbury, Kaituna Valley, Banks Peninsula, in litter, 24.v.75, R.R. Forster (Otago Museum). A single male paratype. Allotype female: Kaituna, Banks Peninsula, 27.viii.64, G.Kuschel. (Ent.div.D.S.I.R.). Two further females and one male in the same sample (Otago Museum).

Records Kaituna Valley, in leaf mould, 1.v.49, W.Dukes, and 12.ix.59. R.R.F., all males.

Mynoglenes brevipes n. sp.

Figs. 453,460.

MALE

Measurements

Carapace	length 1.40	width 0.96
Abdomen	length 1.20	width 0.88

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	0.80	0.28	0.68	0.60	0.44	2.80
2	0.76	0.28	0.60	0.52	0.40	2.56
3	0.64	0.28	0.48	0.40	0.32	2.12
4	0.72	0.32	0.68	0.64	0.40	2.76

Colour Cephalothorax, chelicerae and legs, yellow-brown. Abdomen with blackish dorsal folium, strongly dentate marginally, with two rows of greyish blotches; lateral stripes blackish, ventral region grey.

Legs Short and stout. 1,2 – all spines reduced to hairs. Tm 1 = 0.73. 3,4 – all spines, including apical spines, very short, stout and weak, their lengths less than the diameters of the segments bearing them.

Palp Fig. 453. Close to *redacta* and *banski*, but with the cymbium less elongated.

FEMALE

Measurements

Carapace	length 1.44	width 0.96
Abdomen	length 1.96	width 1.40

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	0.84	0.36	0.72	0.60	0.48	3.00
2	0.84	0.36	0.64	0.56	0.40	2.80
3	0.72	0.28	0.52	0.52	0.36	2.40
4	0.80	0.36	0.76	0.60	0.44	2.96

Colour Cephalothorax, chelicerae and legs dark chestnut-brown, legs with faint annulae. Abdomen as in male.

Legs As in male; Tm 1 = 0.75.

Vulva Fig. 460.

M. brevipes resembles *M. redacta* and *M. banksi* in the genitalia, but can readily be distinguished from them by the reduced spination, short legs and abdominal pattern.

Types Male holotype: South East Island, Chatham Islands, 600 ft. in litter, 8.xi.70, J.I.Townsend. Female allotype, paratypes: South East Island, Chatham Islands, 300 ', 11.xi.70, J.I. Townsend. (Ent.Div. D.S.I.R.).

Mynoglenes chiltoni Hogg

Mynoglenes chiltoni Hogg 1911. Proc. Zool. Soc. Lond. pp. 297-313.

The species was described from males taken at Ruakura and at the summit of Mt. Ngauruhoe, and from a female taken at Picton. The types are held by the British Museum (Natural History) and have not been seen. Hogg's figure suggests a species in Group VI; from the shape of the embolus it cannot be *banksi*, its size excludes *brevipes*, and it is unlikely that *redacta* (from the Snares and Auckland Islands) would have so discontinuous a distribution involving the mainland, although it is not impossible. It should be noted that in 1911, a correct assignment of the Picton female to the same species as the North Island males would have been merely accidental, and until the material has been examined one should be equally wary of assuming that the Ruakura and Ngauruhoe males are conspecific. *M. chiltoni* may, possibly, prove to be identical with one of the species designated below from female material: *M. insignis*, *M. dunstani*, and *M. rupicola*.

Mynoglenes dunstani n. sp.

Fig. 461

Measurements

Carapace	length 1.60	width 0.96
Abdomen	length 1.80	width 0.92

Colour Cephalothorax, chelicerae and legs, dusky yellow. Sternum darker. Abdomen dark grey, without pattern.

Legs Spines typical of genus, 1,2 tibial spines weak, all spines including 3,4 apical spines relatively long. Tm 1 = 0.55.

Vulva Fig. 461. The posterior margin of the broad, strongly-sclerotised scape lies just anterior to the posterior margin of the dorsal plate. This character serves to distinguish it from *M. insignis*, the only species with which it might be confused.

Types Holotype female: Dunstan Mountains, summit at 5400 ft, 23.ii.74, R.R.Forster (Otago Museum). Four female paratypes.

Mynoglenes insignis n. sp.

Fig. 462.

FEMALE

Measurements

Carapace	length 1.52	width 1.04
Abdomen	length 2.32	width 1.20

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	1.20	0.36	1.04	0.88	0.60	4.08
2	1.12	0.36	1.92	0.72	0.48	4.60
3	1.00	0.32	0.72	0.68	0.44	3.16
4	1.28	0.36	1.00	0.92	0.68	4.24

Colour Cephalothorax, and chelicerae dark brown, carapace with black striae radiating from the fovea. Abdomen grey with an irregular black chevron pattern derived from a broken folium. Ventral region pale with white spots. Legs yellow-brown with well-defined dark annulae.

Carapace and sternum Conspicuously rugose, with reticulations similar to those figured for *Metamynoglenes*.

Legs Spines typical of the genus. Spines 1,2 moderately strong. Tibiae 1,2 without apical spines, tibiae 3,4 with apical spines. Metatarsi 1,2,3,4 of the type specimen are without spines, but all other specimens have 3,4 metatarsi with apical spines only. Tm 1 = 0.67.

Vulva Fig. 462.

Type Holotype female: Canterbury, Christchurch, Dean's Bush, wet flax litter, 24.vii.74, A.D. Blest (Otago Museum).

Records Canterbury, Christchurch, Dean's Bush, in wet flax litter, 21.vii.74, 18.vii.75,A.D.B.

The position of this species is uncertain. The rugosity of the carapace and sternum are unusual in *Mynoglenes*, and so is the strong pattern of the carapace. In addition, the foveal depression and the consequent indentation of the carapace as seen in lateral profile is more extreme than in other *Mynoglenes*, and the scape projects ventrally from the epigyne in a manner which resembles the condition in *Pseudafroneta*. However, the dorsal plate does not contribute to the scape, the posterior margins of dorsal plate and scape being separate from each other, whereas in *Pseudafroneta* the scape is formed by fusion of the posterior margins of the epigynal cuticle and the posterior portion of the dorsal plate. Until the male is found, *M. insignis* is placed, tentatively, in Group VI.

GROUP VII.

Mynoglenes tegulata n. sp.

Figs. 456-457, 463.

MALE

Measurements

Carapace	length 1.92		width 1.25
Abdomen	length 1.75		width 0.83

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	1.83	0.50	1.83	1.75	0.92	6.83
2	1.67	0.50	1.58	1.50	0.92	6.17
3	1.25	0.42	1.00	1.25	0.67	5.59
4	1.92	0.50	1.83	1.67	0.92	6.84

Colour Cephalothorax pale yellow with diffuse grey median stripe. Chelicerae pale brown, legs yellow. Abdomen with grey chevron pattern flanked laterally by confluent white spots. Ventral region pale grey with a few white spots.

Legs 1,2 all spines strong, but apical tibial and metatarsal spines absent. 3,4 spines strong and numerous; apical tibial and metatarsal spines present. Tm 1 = 0.90.

Palp Figs. 456,457. Resembles those of species in Group VI, but is distinguished from them by the presence of a large, thin flange which is produced from the distal region of the tegulum to partly conceal both the suprategulum and the tegular prominence from the outer lateral aspect. Exposed loop of embolus very short. The palp of *M. brevipes* is similar, but lacks the tegular flange.

FEMALE

Measurements

Carapace	length 2.17		width 1.46
Abdomen	length 2.67		width 1.63

Leg	Femur	Tatella	Tibia	Metatarsus	Tarsus	Total
1	2.21	0.58	2.00	2.08	1.08	7.95
2	2.00	0.58	1.83	1.75	1.00	7.16
3	1.75	0.50	1.42	1.92	0.75	6.34
4	2.16	0.58	1.92	2.08	1.08	7.82

Colour As male, but legs with dark annulations.

Legs As male. Tm 1 = 0.89.

Vulva Fig. 463. Simple, with bursae angled towards midline.

Types Holotype male; allotype female; Beaten from *Asplenium flaccidum*, Chatham Islands, south of Lake Huro, 16.ii.67, G.W. Ramsay. (Ent.Div.D.S.I.R.). One female paratype.

Records Chatham islands: female beaten from fern, 16-19.ii.67, G.W. Ramsay. Limestone quarry, litter, 11.ii.67, G.Kuschel. Limestone quarry, beating, Feb. 1967, G.W. Ramsay. Hapupu, beaten from *Myrsine*, 27.ii.67, G.Kuschel. Kaingaroa, general beating, 28.ii.67, G.W.Ramsay. Mangahou Creek, 10.ii.67, G.W.Ramsay.

Mynoglenes: Table of Tm 1 values

	Male		Female
Group I			
M. subdola	0.67		0.73
M. innotabilis	0.63		0.57
M. minutissima	–		0.78
Group II			
M. mundenia	0.66		0.76
M. horningi	0.77		0.79
M. inexacta	0.71		0.74
Group III			
M. rufocephalia	0.85		0.81
M. diloris	0.71		0.73
M. fluviatilis	0.71		0.72
Group IV			
M. silvicola	0.65	(0.71)	0.73
M. titan	0.74		0.71
M. paradoxa	0.63		0.58
M. contorta	0.73		–
M. similis	0.69		0.74
Group V			
M. major	0.76		0.71
M. abbreviata	?		–
M. rupicola	–		0.59
M. fucatina	0.63		0.58
Group VI			
M. redacta	0.89		0.79
M. banksi	0.62		0.69
M. brevipes	0.73		0.75
M. dunstani	–		0.55
M. insignis	–		0.67
Group VII			
M. tegulata	0.90		0.89

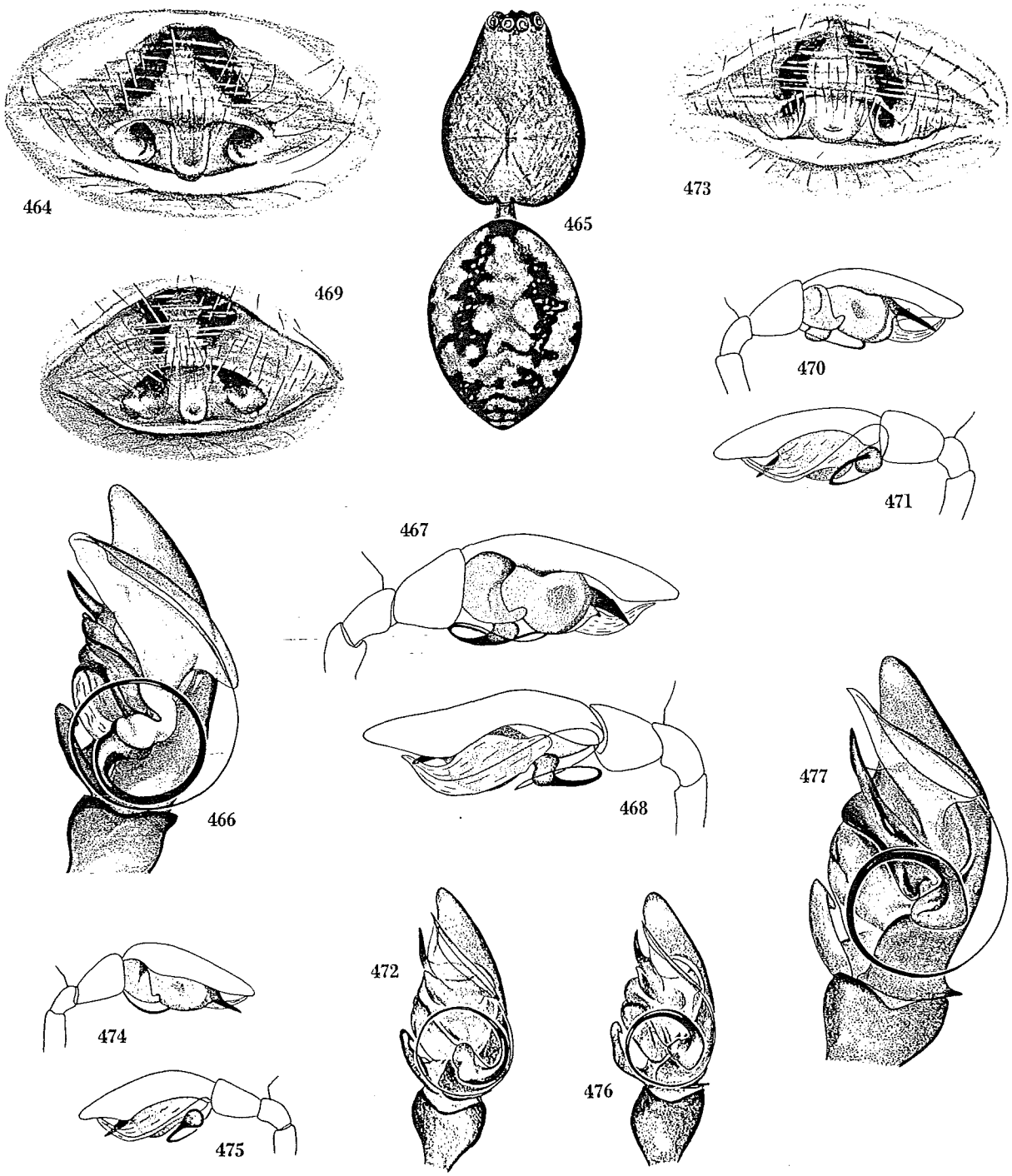
Promynoglenes n. gen.

Small to medium-sized spiders, 2-4 mm. in body length, Carapace smooth or slightly rugose, without sexual dimorphism. Abdomen with strong pattern; consisting of an anterior white band delimiting a blackish folium with two longitudinal rows of white spots which may be partly confluent. Legs with strong annulated patterns. Female palp without claw. Femur I with single prolateral spine only, II-IV without spines. All tibiae with one prolateral, one ventral and two dorsal spines. Tibiae III, IV

with apical spines. Metatarsi spineless. All spines and trichobothria weaker in males than females. Tm I = 0.48–0.66. Male palp: paracymbium broad, not sickle-shaped, with a small blunt distal process. Cymbium with a small alveolus, and with a broad ventral ledge on the mesal side. Suprategulum simple, appearing almost straight in lateral profile, tegular prominence small or almost absent. Conductor boat-shaped, with broad attachment to the tegulum and the base of the radical bulb. Embolus long, filiform, forming a coil whose axis is vertical and which extends across the base of the organ. Distal part of embolus sheathed by conductor. Vulva: similar to *Mynoglenes*, but scape longer and more delicate, and bursae etc. less strongly sclerotised (except *P. grandis*). Posterior margin of dorsal plate not fused to scape.

Type species: **Promynoglenes nobilis** n. sp.

The four species in this genus all inhabit native forests and are rarely found outside them. They occur in moss and detritus, liverworts, and under



Figs. 464-468 *Promynoglenes nobilis* n. sp. 464 Epigyne Fig. 465 carapace and abdomen Fig. 466 ventral aspect of right palp Figs. 467,468 lateral aspects of right palp Figs. 469-472 *Promynoglenes silvestris* n. sp. Fig. 469 Epigyne Figs. 470,471 lateral aspects of right palp Fig. 472 ventral aspect of right palp Figs. 473-476 *Promynoglenes parvula* n. sp. Fig. 473 Epigyne Figs., 474-475 lateral aspects of right palp Fig. 476 ventral aspect of right palp Fig. 477 *Promynoglenes grandis* ventral aspect of right palp

logs. The eggsacs of *P. nobilis* are plano-convex and attached to flat surfaces like those of *Mynoglenes*. Females are readily separable by the vulvae, and sometimes the number of helical coils of the bursae can be counted through the epigynal cuticle, obviating the need to dissect out the genitalia. Males of the two large species, *P. nobilis* and *P. grandis* can be separated by the form of the tegular prominence, but those of *P. silvestris* and *P. parvula* are almost indistinguishable other than by size, although the females are quite distinct. Palps should be oriented for examination in the same way as for *Mynoglenes*.

Promynoglenes nobilis n. sp.

Figs. 464-468, 478

MALE

Measurements

Carapace length 1.75 width 1.42
Abdomen length 2.00 width 1.25

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	1.33	0.45	1.23	1.00	0.70	5.21
2	1.25	0.45	1.08	0.88	0.65	4.31
3	1.00	0.38	0.83	0.83	0.55	3.59
4	1.38	0.43	1.25	1.18	0.70	4.94

Colour Cephalothorax and chelicerae dark brown. Legs yellow with strong dark annulae. Abdominal pattern typical of the genus. (Fig. 465).

Legs 1, 2 tibial spines weak, 3, 4 tibial spines strong. Tm I = 0.60.

Chelicerae With anterior row of 4 strong teeth, posterior row of 6 very minute granular teeth.

Palp Figs. 466, 467, 468. Suprategulum in outer lateral aspect appears to have a small dorsal 'keel'. Embolus very long with an extra turn (compared to *P. silvestris* and *P. parvula*) in the exposed basal portion.

FEMALE

Measurements

Carapace length 1.88 width 1.33
Abdomen length 3.08 width 1.75

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	1.37	0.45	1.35	1.16	0.78	5.11
2	1.23	0.45	1.18	1.08	0.70	4.64
3	1.05	0.45	0.93	0.93	0.58	3.94
4	1.55	0.45	1.50	1.25	0.70	5.54

Colour As for male.

Legs As for male, but all spines stronger. Tm I = 0.66.

Chelicerae Anterior row of 5 strong teeth, posterior row of 6 minute granular teeth.

Genitalia Figs. 464, 478.

Types Holotype male, allotype female: Cascade Creek, Fiordland, 16.8.75. Paratypes: 7 males, 12 females. All under rotting logs in beech forest, A. D. Blest (Otago Museum).

Records Fiordland: Cascade Creek, under logs 19.i.75, A.D.B. Cascade Creek, *Raoulia* 16.i.75, A.D.B., Cascade Creek, 31.iii.72, C.L.W. Cascade Creek, 15.88.66, R.R.F. Cascade Creek, grass and moss in forest, 13.88.75, A.D.B. Key Summit Divide, fern detritus, 12.88.75, A.D.B. Monkey Flat, in debris of grass 30.xii.46, J. T. Salmon. Hollyford, Gunns Camp, jar trap, 17.v.60, J. Winter. Lake Gunn, moss 15.88.75, A.D.B. Head of Lake McKerrow, 6.ii.55, R.R.F. and J.S.D., Stillwater Camp, Caswell Sound, moss, 11.iv.49, R.R.F. Homer Tunnel, 24.iv.49, R.R.F. Homer Tunnel, litter, 19.iv.60, A. Chapman. Homer, 16.ii.66, R.R.F. Lake Te Au, South Arm of Te Anau, 12-24.i.53, R.R.F. Lake Ianthe, 27.i.54, J. T. Salmon. Lake Howden, under logs, 23.i.46, R.R.F. Eglinton Valley, pitfall trap 10.ii.66, R.R.F. Lyttles Flat, tussock by creek, 17.ii.75, A.D.B. Westland: Taumaka, Open Bay Is. pitfall trap in *Freycinetia banksii*, 10.i.71, M. E. Miller. Taumaka, Open Bay Is. 9.i.71, M. E. Miller. Fox Glacier, viii.50, M. Warren. Franz Josef, 24.iv.51, R.R.F.

Promynoglenes grandis n. sp.

Figs. 477, 479.

MALE

Measurements

Carapace length 1.75 width 1.17
Abdomen length 2.08 width 1.25

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	1.75	0.50	1.33	1.17	0.83	5.58
2	1.50	0.50	1.08	0.92	0.67	4.67
3	1.08	0.42	0.75	0.83	0.58	3.66
4	1.42	0.50	1.25	1.16	0.75	5.08

Colour As for *P.nobilis*.

Legs As for *P.nobilis*. Tm 1 = 0.57.

Palp Fig. 477. From the lateral aspect the palp differs very little from that of *P.nobilis*, except for the rather larger keel on the suprategulum, and the more pronounced tegular prominence. From the ventral aspect however, the embolus is seen to be shorter and to be disposed differently at its basal end, and the conductor to be folded differently around its tip.

FEMALE

Measurements

Carapace length 1.50 width 1.00
Abdomen length 1.92 width 1.08

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	1.42	0.42	1.08	1.00	0.67	4.59
2	1.25	0.42	0.92	1.00	0.58	4.17
3	1.00	0.33	0.75	0.67	0.58	3.33
4	1.33	0.42	1.08	0.92	0.67	4.42

Colour As in the male.

Legs As in the male. Tm I = 0.56

Vulva Fig. 479.

Type Holotype male, allotype female: N. W. Nelson, Mt Domett, 1463 m from *Raoulia* mats, G. W. Ramsay (Ent.Div., D.S.I.R.).

Promynoglenes silvestris n. sp.

Figs. 469-472, 480

MALE

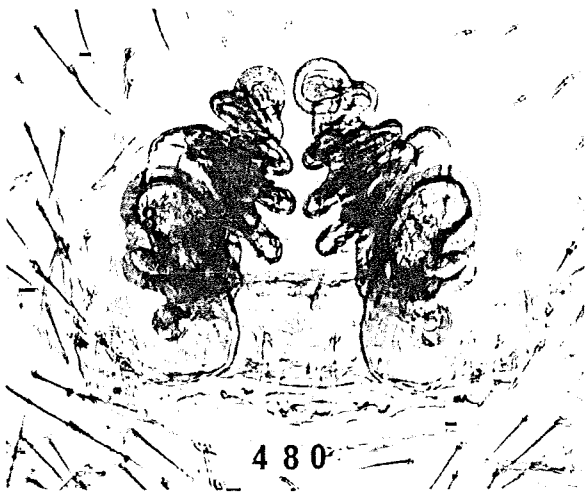
Measurements

Carapace length 1.17 width 0.84
Abdomen length 1.28 width 0.84

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	0.83	0.33	0.73	0.60	0.52	3.01
2	0.80	0.33	0.63	0.55	0.45	2.76
3	0.72	0.23	0.50	0.48	0.38	2.31
4	0.87	0.27	0.75	0.65	0.50	3.04

478

479



480

481

Vulvae Fig. 478 *Promynoglenes nobilis* n. sp. Fig. 479 *P.grandis* n. sp. Fig. 480 *P.silvestris* n. sp. Fig. 481 *P.parvula* n. sp.

Colour As for *P.nobilis.*

Legs As for *P.nobilis.* Tm I = 0.60.

Chelicerae 4 strong anterior teeth only.

Palp Figs. 470, 471, 472. Suprategulum without keel.

FEMALE

Measurements

Carapace	length 1.28		width 0.96
Abdomen	length 1.60		width 0.96

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	0.95	0.33	0.73	0.70	0.50	3.21
2	0.93	0.33	0.70	0.70	0.47	3.13
3	0.70	0.27	0.63	0.57	0.43	2.60
4	1.03	0.33	0.95	0.83	0.50	3.54

Colour As for male.

Legs As for male, but spines stronger. Tm I = 0.57.

Chelicerae Anterior row of 4 strong teeth, posterior row of 4 very minute granular teeth.

Genitalia Figs. 469, 480.

Types Holotype male, allotype female, Arthur's Pass, Canterbury, in *Polytrichum* moss under beech forest. 8.vii.74, A.D.Blest (Otago Museum).

Records Canterbury: Deans Bush, Christchurch, 4.iii.43, J. T. Salmon. Hermitage, Mt Cook, 20.i.51, R.R.F. Bealey, 29.ix.66, R.R.F. C.L.W., Arthur's Pass, Temple Basin, 3500 ft. tussock, 24.xi.74, A.D.B. Arthur's Pass, 9.viii.74, A.D.B. Arthur's Pass, Rough Creek, under stones, 3.viii.74, A.D.B., Arthur's Pass, Rough Creek, *Nothofagus*, 20.vii.74, P. M. Johns. Arthur's Pass, Klondyke Corner, willow litter. 6.vii.74, A.D.B. Arthur's Pass, *Dracophyllum* litter 5.vii.74, A.D.B. Arthur's Pass *Sphagnum* 8.vii.74, A.D.B. Arthur's Pass *Sphagnum* 8.vii.74, A.D.B. Westland: Moana, leaf mould, 10.iii.50, R.R.F. Tawhia S.F. litter, 18.viii.72, J. C. Watt. McGrath's Creek, leaf mould, 3.i.50, E. W. Dawson. Hokitika, Ruatapu, isolated *Sphagnum*, 13.vii.74, A.D.B. Hokitika, Ruatapu, liverworts on terrace, 13.vii.74, A.D.B. Hokitika, Ruatapu *Sphagnum* 13.vii.74, A.D.B.

Promynoglenes parvula n. sp.

Figs. 473-476, 481

MALE

Measurements

Carapace	length 1.08	width 0.76
Abdomen	length 1.04	width 0.60

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	0.80	0.28	0.63	0.55	0.45	2.71
2	0.75	0.28	0.58	0.50	0.40	2.51
3	0.55	0.25	0.45	0.40	0.33	1.98
4	0.80	0.28	0.75	0.63	0.43	2.89

Colour Folium black, with discrete grey chevrons in posterior half, each with a white spot. Other characters typical of genus.

Legs As for *P.nobilis*. Tm I = 0.48.

Chelicerae 3 small anterior teeth only.

Palp Figs. 474, 475, 476. Smaller than the palp of *P.silvestris*; from the ventral aspect, small differences in the shape of the radical component and of the suprategulum distinguish it from *P.silvestris*.

FEMALE

Measurements

Carapace	length 1.20	width 0.80
Abdomen	length 1.52	width 1.04

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	0.90	0.33	0.70	0.60	0.48	3.01
2	0.80	0.33	0.57	0.55	0.45	2.70
3	0.60	0.29	0.48	0.48	0.35	2.20
4	0.88	0.28	0.75	0.68	0.48	3.07

Colour As for male.

Legs As for *P.nobilis*. Tm I = 0.54.

Chelicerae Anterior row of 3 strong teeth and 1 very small distal tooth. Posterior row of 4 extremely minute granular teeth.

Genitalia Fig. 473, 481.

Types Holotype male, allotype female: Kowhai Bush, Kaikoura, wet litter under dense mixed scrub, 30.vi.74, A. D. Blest. 6 female paratypes and one juvenile female in the same sample.

Records Marlborough: Kowhai Bush, Kaikoura, wet soil under grass and manuka, 27.xii.74, A.D.B. Kaikoura, Puhipuhi Reserve 600 ft, litter, A. K. Walker. Broken River, leafmould, 5.ii.50, MacFarlane. Nelson Oparara, 28.ix.66. R.R.F. & C.L.W. Mangarakau, 13.viii.66. Canterbury Deans Bush, leafmould, 17.iv.48, E. W. Dawson. Marlborough: Onamaluta Domain, 22.ix.65, L. Marchant.

Metamynoglenes n. gen.

Small to medium-sized spiders. Subocular sulci well-developed. Femur I with a single prolateral spine only, all femora without dorsal spines. Tibiae 1,2 without apical spines, 3,4 with apical spines. All metatarsi without spines. Tm I = 0.30 - 0.75. Abdomens with patterns weak, or absent, but often with conspicuous white spots. Male palp with paracymbium broad basally, distal arm reduced to relatively small protruberance. Suprategulum a slender, curved hook, blunt at tip. Tegular prominence a large, spatulate process. Conductor long, slender, broadly attached to the tegulum and the radical component of embolus. Embolus spiniform, sheathed by conductor, with a distinct radical component basally. Female vulva with scape displaced anteriorly to a variable extent, but always with its posterior margin anterior to the posterior margin of the dorsal plate, with which it is not fused. Bursae either simple and angled, or helical.

Type species: *Metamynoglenes incurvata* n. sp.

I have not seen living examples of *Metamynoglenes*. The scanty records of this genus and the distribution of the six species, suggest that they inhabit deep litter. In the North Island, they may well prove to occupy similar niches to those preferred by the exclusively South Island species of *Promynoglenes*. The development of the bursae follows a similar pattern to that found within *Mynoglenes*, from which it is separated by the shape of the paracymbium, the form of the tegular prominence, and the quite different position and form of the female scape. The latter two characters and the disposition of the embolus at its basal end distinguish *Metamynoglenes* from *Promynoglenes*.

Males of the two smaller species for which they are known are difficult to separate, and the arrangement of the embolus in relation to the cymbium is the easiest character to employ for identification.

Metamynoglenes incurvata n. sp.

Figs. 482-483, 490

MALE

Measurements

Carapace	length 2.08	width 1.25
Abdomen	length 2.08	width 1.25

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	1.42	0.50	1.33	1.08	0.67	5.00
2	1.33	0.50	1.08	1.00	0.58	4.49
3	1.00	0.50	1.75	0.67	0.50	3.42
4	1.50	0.42	1.25	1.00	0.75	4.92

Colour Cephalothorax, chelicerae and legs, dark brown. Femora darkened, legs with annulae. Abdomen grey with obscure folium mottled with pale blotches.

Legs Chaetotaxy as in genus description. Tm I = 0.48.

Palp Figs. 482, 483.

FEMALE

Measurements

Carapace	length 1.83	width 1.08
Abdomen	length 2.25	width 1.58

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	1.50	0.50	1.33	1.08	0.67	5.08
2	1.42	0.50	1.17	1.00	0.67	4.76
3	1.08	0.42	0.83	0.92	0.50	3.75
4	1.50	0.42	1.33	1.17	0.58	5.00

Colour As in male.

Legs As in male. Tm I = 0.45.

Vulva Fig. 490.

Types Holotype male, allotype female: Nelson. Mount Balloon, under logs at 4100ft., 26.i.48, R.R.F. (National Museum). Male and female paratypes.

Metamynoglenes magna n. sp.

Fig. 493

FEMALE

Measurements

Carapace	length 1.92	width 1.33
Abdomen	length 3.33	width 1.92

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	1.67	0.50	1.50	1.33	0.83	5.83
2	1.58	0.58	1.25	1.08	0.67	5.16
3	1.25	0.42	1.00	0.92	0.58	4.17
4	1.50	0.42	1.42	1.42	0.75	5.51

Colour Cephalothorax, chelicerae and legs dark brown. Femora darker, legs with dusky annulae. Abdomen grey, with very faint dorsal folium and numerous scattered white spots. Ventral region grey with white spots.

Legs Femur I with prolateral spine only (left), with one prolateral and one dorsal spine (right). 2,3,4 femora without spines. All tibiae with apical spines, slender on 1,2. Apical metatarsal spines absent. Tm I = 0.53.

Vulva Fig. 493. This is figured from the 1948 specimen.

Type: Holotype female: Nelson, Canaan Track, Pikikiruna Range at 2000', 17.iii.60, O'Brien (Otago Museum)

Records Nelson, Canaan Track, 25.x.48, Cawthron coll.

Metamynoglenes gracilis n. sp.

Fig. 494

FEMALE

Measurements

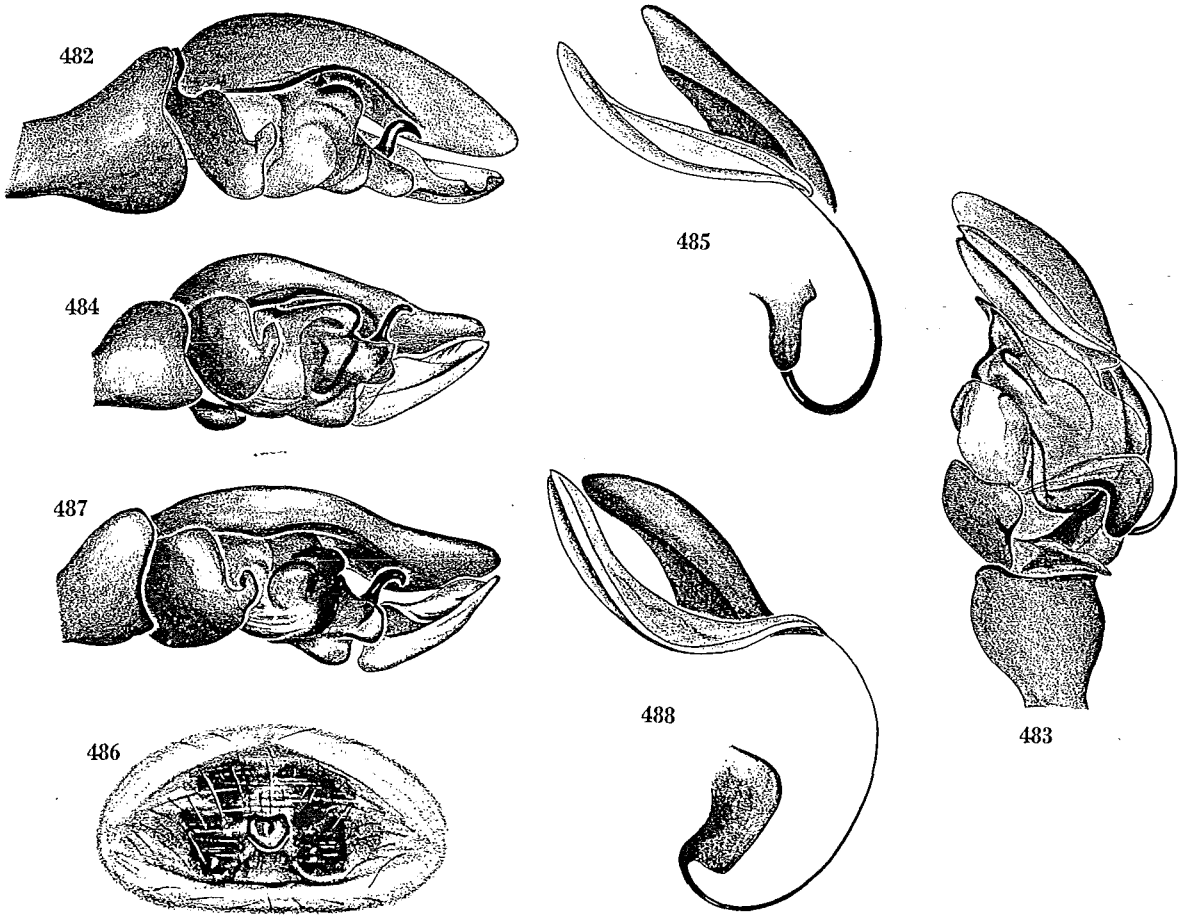
Carapace length 1.28 width 1.00
Abdomen length 1.44 width 0.92

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	1.04	0.40	0.96	0.88	0.56	3.84
2	0.96	0.36	0.84	0.76	0.56	3.48
3	0.80	0.28	0.68	0.64	0.40	2.80
4	1.08	0.36	0.84	0.88	0.56	3.72

Colour Cephalothorax, chelicerae and legs, dusky brown, carapace with dusky striae. Legs with well-defined annulae. Abdomen with dorsal folium broken up by pale blotches and white spots.

Legs Femora I with single prolateral spines. 1,2,3,4 femora without dorsal spines. All tibiae with apical spines, metatarsi spineless. 1,2 spines weak. Tm I = 0.76.

Vulva Fig. 494.

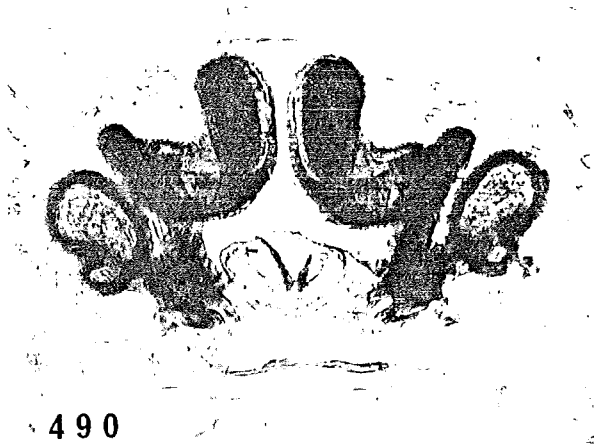


Figs. 482-483 *Metamynoglenes incurvata* n. sp. Fig. 482 outer lateral aspect of palp Fig. 483 ventral aspect of palp Figs. 484-486 *M. attenuata* n. sp. Fig. 484 outer lateral aspect of palp Fig. 485 embolus, fold of conductor and distal cymbium from ventral aspect. Fig. 486 epigyne. Figs. 487-488 *M. flagellata* n. sp. Fig. 487 outer lateral aspect of palp Fig. 488 embolus, fold of conductor and distal cymbium from ventral aspect

Type Holotype female: N.W. Nelson, Mangarakau, 13.viii.66, C. L. Wilton (Otago Museum).

M.gracilis is placed in *Metamynoglenes* primarily because of the position and characteristic shape of the scape. The narrow bursae, which do not seem wide enough to accommodate the conductor, preclude it being put in *Pseudafroneta*. It would seem to be close to *M.incurvata*.

489



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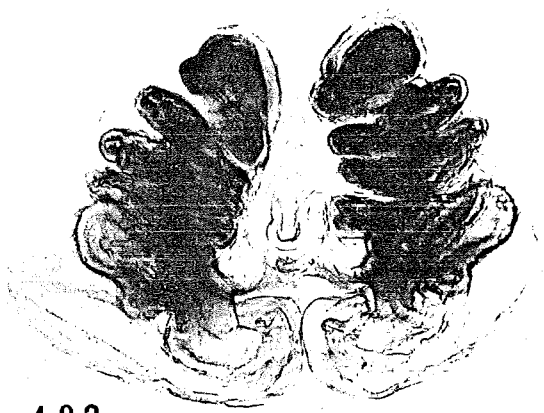

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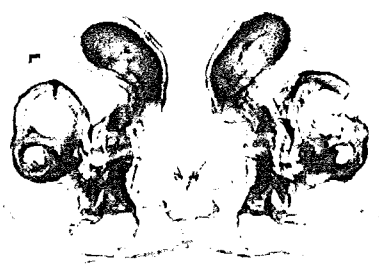


494

Vulvae Fig. 489 *Metamynoglenes attenuata* n. sp. Fig. 490 *M.incurvata* n. sp. Fig. 492 *M.helicoides* n. sp. Fig. 493 *M.magna* n. sp. Fig. 494 *M.gracilis* n. sp.

Metamynoglenes attenuata n. sp.

Figs. 484-486,489

MALE

Measurements

Carapace length 1.44 width 0.92
Abdomen length 1.32 width 0.72

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	1.24	0.36	1.12	0.96	0.64	4.32
2	1.08	0.36	0.92	0.84	0.58	3.78
3	0.84	0.32	0.76	0.72	0.48	3.12
4	1.16	0.36	0.88	0.92	0.64	3.96

Colour Cephalothorax, chelicerae and legs yellow-brown. Abdomen grey with an obscure dorsal folium and white spots.

Legs I femur with one prolateral spine only, 2,3,4 femora without spines. 1,2 without apical tibial spines, 3,4 with apical tibial spines, all metatarsi spineless. Tm I = 0.34.

Palp Figs. 484, 485.

FEMALE

Measurements

Carapace length 1.67 width 1.17
Abdomen length 2.17 width 1.33

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	1.33	0.42	1.17	1.08	0.67	4.67
2	1.17	0.33	1.00	1.00	0.58	4.08
3	1.00	0.33	0.83	0.75	0.50	3.41
4	1.42	0.42	1.17	1.08	0.67	4.76

Colour Cephalothorax, chelicerae and legs yellow-brown. 1,2 femora dark, legs with annulae. Abdomen as in male.

Legs Chaetotaxy as in the male. Tm I = 0.4.

Genitalia Figs. 486, 489.

Types Holotype male, allotype female: Wellington: Silverhope, Hunterville, iii.57, R. J. Ramsay (Otago Museum).

Records Nelson: Palmers Bush, Eves Valley, Waimea, Nelson, 20.x.71, G. W. Ramsay. Upper Rangitira. 30.ii.48, G. W. Ramsay. Whitemans Valley, Leafmould, 10.viii.46, A. J. Healy.

Metamynoglenes flagellata n. sp.

Figs. 487-488,491

MALE

Measurements

Carapace length 1.36 width 1.00
Abdomen length 1.40 width 0.80

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	1.12	0.40	1.08	0.96	0.64	4.20
2	1.04	0.36	0.84	0.80	0.48	3.52
3	0.84	0.32	0.68	0.60	0.44	2.88
4	1.04	0.32	1.08	0.92	0.56	3.92

Colour Cephalothorax, chelicerae brown. Legs Yellow-brown, femora darkened, with annulae.

Legs Chaetotaxy as in *M.attenuata*. Tm I = 0.64. The position of the trichobothria is uncertain in this specimen. Another male gave Tm I = 0.55.

Palp Figs. 487, 488. The embolus of this, and other males available is displaced from the conductor, and the drawing reconstructs its natural position on the assumption that the tips of the embolus and conductor coincide. The exposed loop of the embolus is larger than in *attenuata*, the conductor as seen in ventral aspect extends beyond the margin of the cymbium basally, the cymbium is more notably twisted distally, and the radical component is a different shape.

FEMALE

Measurements

Carapace length 1.36 width 1.00
Abdomen length 1.68 width 1.00

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	1.16	0.40	1.00	0.96	0.64	4.16
2	1.12	0.36	0.84	0.84	0.56	3.72
3	0.88	0.32	0.68	0.68	0.48	3.04
4	1.12	0.36	1.00	0.88	0.64	4.00

Colour As in male.

Legs As in male. Tm I = 0.52.

Vulva Fig. 491.

Types Holotype male, allotype, female: Wairarapa, mixed forest litter, 22.iv.65. M. Luxton (Otago Museum).

Records Wellington: Kapiti Island, leafmould, 20.iv.59, R. G. Ordish. Kapiti Is, v.47,R.R.F.; Akatarawa, 30.ii.48, J. T. Salmon. Hawkes Bay: Norsewood Motor Camp, 14.iii.66, C.L.W. Manawatu: Johnson's Park, Feilding, under log, 22.iii.43, R.R.F. Marlborough Port Underwood Saddle, ix.69, Litter, G. Kuschel.

Metamynoglenes helicoides n. sp.

Fig. 492

FEMALE

Measurements

Carapace length 1.20 width 0.92
Abdomen length 1.60 width 0.92

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	1.04	0.36	0.80	0.80	0.64	3.64
2	0.96	0.36	0.80	0.64	0.48	3.24
3	0.84	0.32	0.60	0.60	0.40	2.76
4	1.08	0.36	0.96	0.80	0.52	3.72

Colour Cephalothorax, chelicerae and legs, pale yellow. Abdomen, pale grey without any pattern. Specimen recently moulted.

Legs Femur I with a single prolateral spine only, dorsal femoral spines absent. Tibiae 1,2 without apical spines, tibiae 3,4 with apical spines. All metatarsi spineless, Tm I = 0.49.

Vulva Fig. 492.

Type Holotype female: Mount Te Aroha, 3000' in leafmould. 5.iii.46, J. T. Salmon (National Museum).

The helical bursa implies that the male will prove to have a very long embolus, and the shape of the palp should exaggerate the arrangement found in *M.flagellata*.

Pseudafroneta n. gen.

Small to medium-sized spiders. Sub-ocular sulci well-developed, median region of carapace anterior to fovea with forwardly-directed hairs. Femur I always with a single prolateral spine, sometimes two. Dorsal femoral spines present or absent in various combinations, not always consistently even within species. Tibiae and metatarsi with or without apical spines. Tm I = 0.35 – 0.75. Male palp with small, broad paracymbium; suprategulum short, obtuse, directed outwards; tegular

prominence present: conductor slender and not attached to tegulum, continuous with the basal region of the embolus, so that the complex formed by the embolus and conductor together is attached to the tegulum by the less heavily sclerotised duct membrane. Embolus a more-or-less straight spine, without a distinct radical component. Female vulva with a small, usually membranous scape strongly projecting ventrally and tenuously connected to the anterior region of epigynal cuticle. Scape fused at its posterior margin to the posterior margin of the dorsal plate (Figs. 378,379). Bursae broad, fairly straight and rather widely separated.

Type species: Pseudafroneta incerta (Bryant)

The fusion of the conductor to the embolus to form a complex distinguishes this genus from the other New Zealand Mynogleninae; the same arrangement, however, is certainly found in *Afroneta brevidentata* Holm (Figs. 585, 586, 603) and appears likely to be found in other Central African *Afroneta*, for it is implied by drawings of undescribed species kindly supplied by Dr. A. Holm. This feature is not evident in unexpanded palps, and those of small species of *Pseudafroneta* are deceptively close to those of *Parafroneta* to casual inspection. Females can be recognised by the projecting, usually membranous scapes, which are often distorted by mounting.

All *Pseudafroneta* are taken from leafmould and deep litter.

Only the egg-sac of *P.incerta* has been seen; it is flattened and attached to the undersides of logs or dead leaves in a similar manner to those of *Mynoglenes*.

Pseudafroneta incerta (Bryant)

Mynoglenes incerta Bryant 1935. Rec.Cant.Mus. 4:76

Figs. 495, 501, 503.

MALE

Measurements

Carapace	length 1.58	width 1.08	
Abdomen	length 1.83	width 1.25	

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	1.50	0.42	1.33	1.08	0.75	5.08
2	1.42	0.42	1.25	0.92	0.67	4.68
3	1.00	0.33	0.83	0.75	0.58	3.49
4	1.33	0.42	1.25	1.17	0.75	4.92

Colour Cephalothorax, chelicerae and legs brown, legs with well-defined dark annulae. Abdomen with a dorsal folium with well-defined dentate margins, broken up medially by paler blotches.

Legs Femora 1 with one prolateral and one dorsal spine. Tibiae 1, 2 without apical spines, metatarsi spineless. Femora 3,4 with one dorsal spine, tibiae and metatarsi with apical spines. Tm 1 = 0.56.

Palp Fig. 495. The small, spine-like process arising from the embolus distinguishes males of this species from *P.lineata*, in which it is absent, and *P.maxima*, in which a corresponding process is present, but much nearer to the base of the embolus. The character is not entirely reliable, because in a minority of specimens it cannot be seen in the unexpanded palp.

FEMALE

Measurements

Carapace	length 1.75	width 1.33
Abdomen	length 3.75	width 2.33

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	1.58	0.50	1.50	1.17	0.83	5.58
2	1.42	0.42	1.25	1.08	0.75	4.92
3	1.25	0.42	1.00	0.92	0.67	4.26
4	1.58	0.42	1.50	1.08	0.67	5.25

Colour As in male.

Legs As in male, but 1,2, tibiae with apical spines. Tm 1 = 0.53.

Genitalia Figs. 501,503.

Type Holotype male: Canterbury, Otarama (Canterbury Museum).

Records Canterbury: Christchurch, Deans Bush, flax litter, 24.vii.74,A.D.B. South Brighton, lupin and pine litter, 27.vii.74, A.D.B. South Brighton, pine and grass litter, 13.vi.74, 20.vii.74, 27.vii.74, 20.viii.74, pine litter 19.vii.74, A.D.B. Lincoln, pitfall trap, P.A. Campbell Prices Valley, 14.iv.67, R.R.F., C.L.W. Kaituna Valley 10.ix.54, 1.xi.66, R.R.F. Waimakariri Track, under stones, 10.viii.74, A.D.B. Akaroa, i.58, R. Pilgrim Little River, 18.x.67, C.L.W. Lewis Pass, Deep Stream, 6.xi.62, P.M. Johns Chalk Hill, 3.iv.55, R.R.F. Harmans Gorge, Waimate, 29.vi.53, J.S. Dugdale Orari River near Geraldine, 30.ix.66., R.R.F. Kakanui, 30.iv.50, R.R.F. Otago: Dunedin, Opoho Bush, pitfall 17-23. xi.70,C.L.W. Fillyburn Bridges,(S33-9537) pitfall, 4.x.67, 4.xi.67, C.L.W. Taieri Ridge, Middlemarch, 5.xii.70, T.R. Beatson Wedderburn, (S33-7274) pitfall, 18.iv.68, C.L.W.

The pair described here were from the sample taken on the Waimakariri Track, Canterbury, 10.viii.74, A.D.B.

Pseudafroneta maxima n. sp.

Fig. 496

MALE

Measurements

Carapace	length 2.58	width 1.75	
Abdomen	length 2.92	width 1.75	

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	2.33	0.75	2.00	1.83	1.00	7.91
2	2.25	0.75	1.92	1.67	0.92	7.51
3	1.83	0.58	1.33	1.42	0.75	5.91
4	2.08	0.67	1.83	1.83	0.92	7.33

Colour As for *P.incerta*.

Legs As for *P.incerta*, but metatarsi 3,4 lack distinct apical spines. Tm 1 not located.

Palp Fig. 496. Compared to *P.incerta* and *P.lineata* the embolus narrows abruptly quite close to its base; the small spine-like process which arises from the embolus in *incerta* at about one-third of its length from the base is represented by a process near to the base at the point at which it narrows.

Type Holotype male: Goose Bay, Canterbury, 30.v.52, J.S. Dugdale (Canterbury Museum).

Pseudafroneta lineata n. ep.

Figs. 497,504.

MALE

Measurements

Carapace	length 1.75	width 1.17
Abdomen	length 1.83	width 1.16

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	1.50	0.42	1.42	1.17	0.75	5.26
2	1.33	0.42	1.33	1.00	0.75	4.83
3	1.25	0.42	0.92	0.83	0.67	4.09
4	1.58	0.42	1.25	1.25	0.83	5.33

Colour Cephalothorax, chelicerae and legs brown, legs with dark annulae. Abdomen with a dorsal folium with a paler median stripe and dentate margins.

Legs Chaetotaxy as in genus description. Tibiae 1,2 with apical spines, metatarsi spineless. Tibiae 3,4 and metatarsi with apical spines. Tm 1 = 0.50.

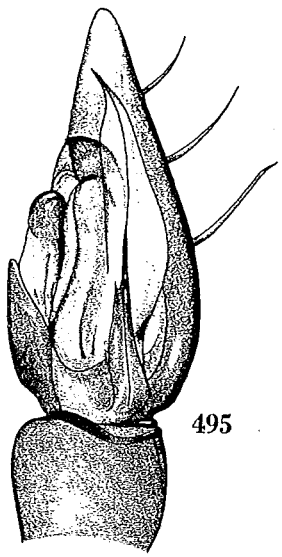
Palp Fig. 497.

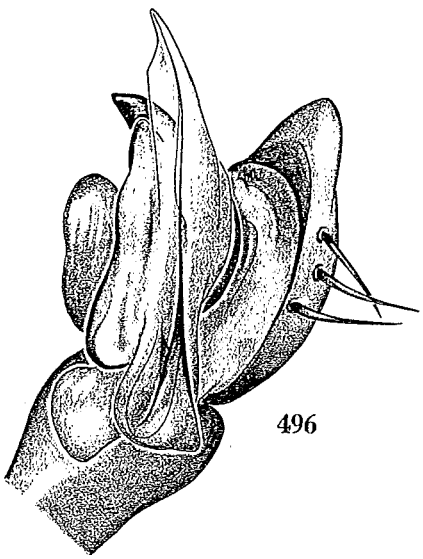
FEMALE

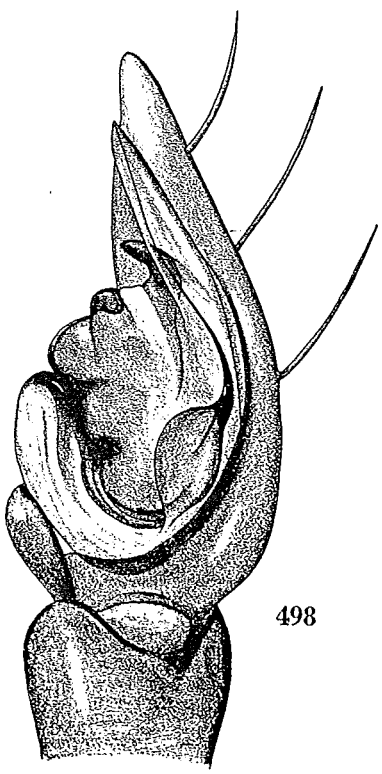
Measurements

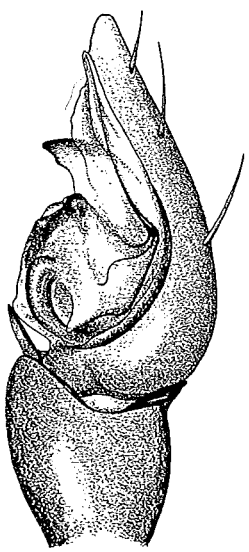
Carapace length 1.92 width 1.50
Abdomen length 3.08 width 2.08

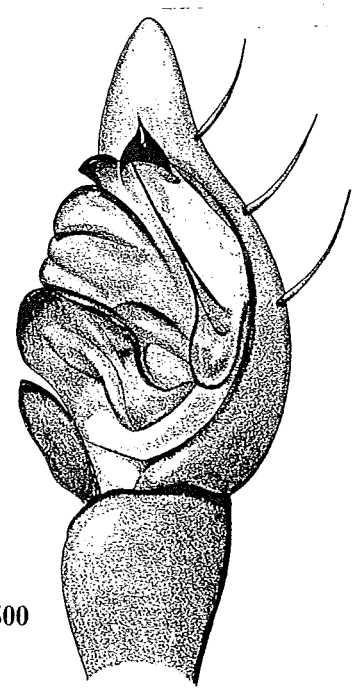
Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	1.33	0.42	1.17	1.00	0.63	4.55
2	1.33	0.33	1.17	1.08	0.67	4.58
3	1.25	0.33	0.92	0.75	0.58	3.83
4	1.50	0.42	1.25	1.17	0.75	5.09











Figs. 495-500 *Pseudafroneta* palps, from ventral aspect Fig. 495 *Pseudafroneta incerta* (Bryant) Fig. 496 *P.maxima* n. sp. The haematodocha are partly expanded, and the palp is drawn so as to align the conductor and embolus with those of the other species. Fig. 497 *P.lineata* n. sp. Fig. 498 *P.perplexa* n. sp. Fig. 499 *P.prominula* n. sp. Figs. 495-499 are drawn to the same scale Fig. 500 *P.pallida* n. sp.

Colour Cephalothorax, chelicerae and legs brown, legs with strongly-defined dark annulae. Abdomen pale grey, with dorsal folium reduced to two longitudinal dentate stripes on a pale ground.

Legs Chaetotaxy as in genus description; Femora 1 with one dorsal and one prolateral spine; femora 2 with one dorsal spine; femora 3,4 without dorsal spines. All metatarsi spineless. Tm 1 = 0.48.

Vulva Fig. 504.

Types: Holotype male: Wairarapa: Te Wharau, in beech leaf-mould, 13.ix.70, C.L.W. (Otago Museum). Allotype female: Auckland, Titirangi, 19.x.69, F.A. Alack (Ent.Div.D.S.I.R.).

Records Wairarapa, Mangareia, xi.57. C.L.W.

Although the chaetotaxy of the male and female is not wholly consistent, it is considered likely that they should be regarded as belonging to a single species. The male palp is close to that of *P.incerta*, but as well as lacking the embolic spine, *lineata* shows small differences of proportion.

The epigyne closely resembles that of *P.incerta*, and cannot be distinguished from it without dissection. The bursae of the two species are, however, quite distinct, though it should be noted that, superficially, the bursae and receptacula of *P.lineata* resemble those of *Parafroneta marrineri*. *P.lineata*, however, possesses the ill-defined, membranous scape typical of many *Pseudafroneta*, whereas in *Parafroneta* it is reduced to a well-defined socket flush with the epigynal cuticle. The three known females of *P.lineata* all have the same dentate abdominal pattern. It is likely that *lineata* will prove to replace *incerta* in the North Island.

Pseudafroneta perplexa n. sp.

Figs. 498,502,506.

MALE

Measurements

Carapace length 2.50 width 1.75
Abdomen length 3.17 width 1.67

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	2.58	0.67	2.33	2.08	1.25	8.91
2	2.17	0.58	2.08	1.75	1.00	7.58
3	1.75	0.67	1.50	1.50	0.83	6.25
4	2.25	0.67	2.08	2.00	1.08	8.08

Colour Cephalothorax, chelicerae and legs brown, legs with dark annulae. Abdomen with a dark, dentate dorsal folium broken up medially by pale blotches.

Legs Left femur 1 with two prolateral, one dorsal spine; right femur with one prolateral, one dorsal spine. 2,3,4 without dorsal femoral spines. 1,2 without apical tibial or metatarsal spines, all spines weak. Metatarsi 3,4 without apical spines, tibiae with apical spines. Tm 1 = 0.71.

Palp Fig. 498. The long, slender conductor is readily displaced so that it no longer lies along the distal part of the cymbium, but seems to project laterally at an angle to the palp.

FEMALE

Measurements

Carapace length 2.25 width 1.58
Abdomen length 3.75 width 3.08

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	2.08	0.58	1.92	1.58	1.17	7.33
2	2.00	0.58	1.75	1.67	1.00	7.00
3	1.67	0.58	1.42	1.42	0.79	5.88
4	2.17	0.58	1.75	1.83	1.08	7.41

Colour As in male.

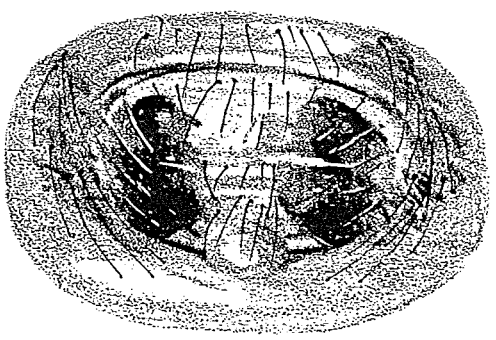
Legs Femora 1 with one prolateral and one dorsal spine. Femora 2 with one dorsal spine. Femora 3,4 without spines. Remaining chaetotaxy as for male, but spines on 1,2 stronger. Tm 1 = 0.70.

Genitalia Figs. 502, 506. Scape less protuberant and more strongly sclerotised than in other species of the genus.

Types Holotype male, allotype female: Otago: Dunedin, Sullivan's Dam, leaf-mould, 20.ii.66, R.R. Forster (Otago Museum). Female paratypes.

Records Otago: Dunedin, Leith Saddle, pitfall (S42-1781), 24.ix.66, 25.i.67, 7.11.67, 2.iv.67, 8.iv.67, 12.viii.67, 25.viii.67, R.R.F., Leith Hill, Dunedin, bush and grass, 6.xii.74, A.D.B. Leith Saddle, litter, 5.v.60, A. Chapman Dunedin, Sullivan's Dam, leaf-mould, 6.i.63, R.R.F. Dunedin, Fraser's Road, 7.v.66, C.L.W. Dunedin, iv.60, R.R.F. Waihola, Taieri Mouth, 26.xi.66 C.L.W. Dunedin, Cannington Road, under stones in stream, 7.xii.74, A.D.B. Southland: Between L. George and Orepuki, 31.v.62, B. J. Marples L. Hauroko, 25.xi.70, R.R.F., C.L.W. Stewart Island Golden Bay, 15.xi.61, R.R.F. Taumutu, Papatawai, 11.i.61, R.R.F. Fiordland, Green Lake, 15.iv.75, A.D.B.

P.perplex varies greatly in size, and large examples are of similar magnitude and appearance to



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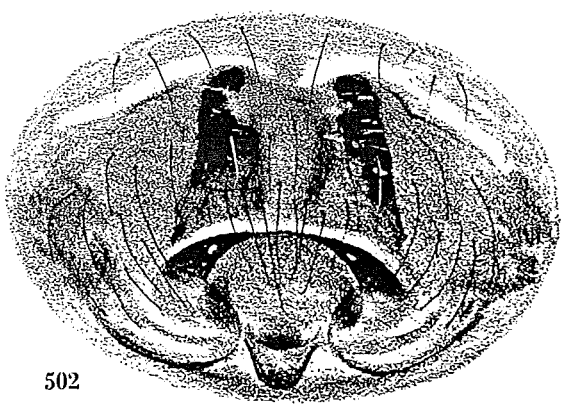

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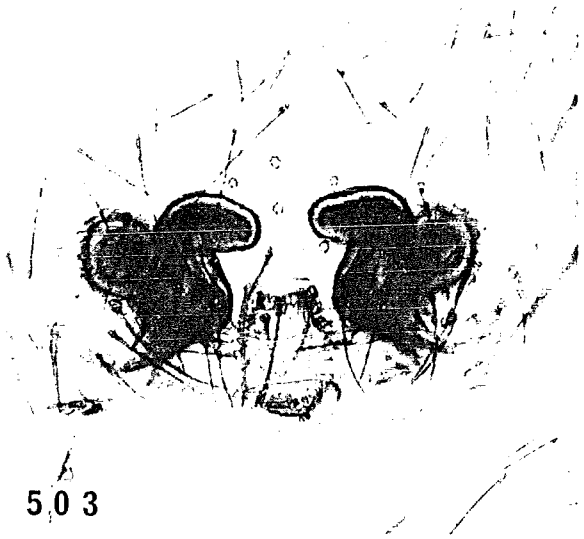
Fig. 501 *Pseudafroneta incerta* (Bryant) Epigynum Fig. 502 *P.perplexa* n. sp. epigynum



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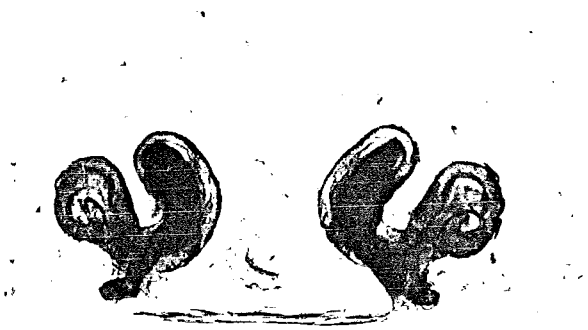

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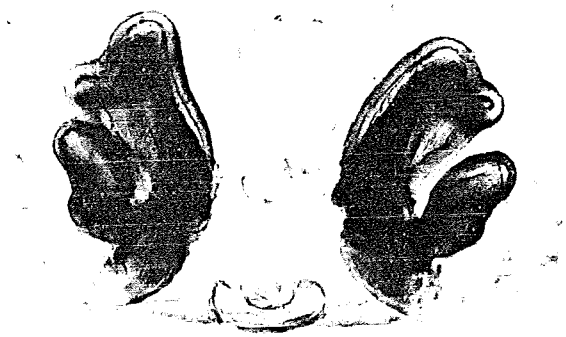

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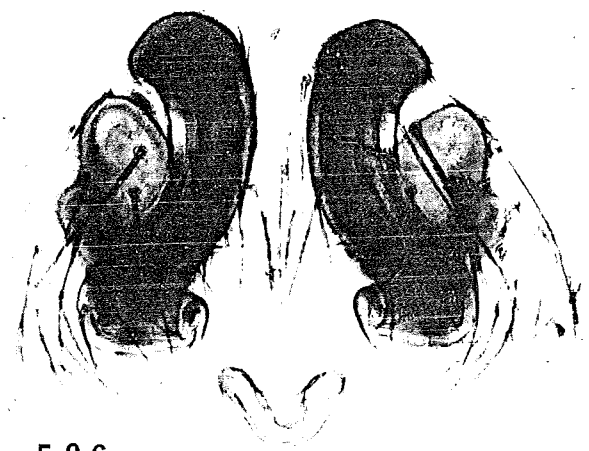


506

507

508

Vulvae Fig. 503 *Pseudafroneta incerta* (Bryant) Fig. 504 *P.lineata* n. sp. Fig. 505 *P.prominula* n. sp. Fig. 505 *P.prominula* n. sp. Fig. 506 *P.perplexa* n. sp. Fig. 507 *P.frigida* n. sp. Fig. 508 *P.taranakii* n. sp.

Mynoglenes titan. Most records are of spiders taken in leaf-mould, but I have found females together with *M.titan* under stones on a wet, shaded creek-bed at Cannington Road, Dunedin.

Pseudafroneta prominula n. sp.

Figs. 499, 505.

MALE

Measurements

Carapace	length 1.83	width 1.25	
Abdomen	missing		

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	1.50	0.50	1.42	1.25	0.83	5.50
2	1.50	0.50	1.42	1.25	0.75	5.42
3	1.25	0.42	1.00	1.00	0.67	4.34
4	1.58	0.50	1.50	1.33	0.83	5.74

Colour Cephalothorax, chelicerae and legs, brown. Legs without annulae.

Legs Left femur 1 with one prolaterial spine, right with two. Tibiae 1,2 without apical spines, tibiae 3,4 with apical spines. All metatarsi spineless. All spines and hairs long and slender, resembling those of *Novafroneta*. Tm I = 0.65.

Palp Fig. 499.

FEMALE

Measurements

Carapace	length 2.33	width 1.42
Abdomen	length 3.33	width 2.08

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	1.83	0.58	1.67	1.33	1.00	6.41
2	1.67		damaged			
3	1.50	0.50	1.25	0.92	0.75	4.92
4	1.83	0.58	1.75	1.75	1.00	6.91

Colour As for male; abdomen black with some thin, pale transverse bars posteriorly.

Legs As for male; both femora 1 with a single prolateral spine only. Tm I = 0.66.

Vulva Fig. 505. The broad, flattened bursae are characteristic and distinguish *prominula* from *perplexa* and *frigida*.

Types Holotype male, allotype female: Fiordland, head of Chesterburn, Te Anau, 3-4000′, 14.ii.53, B. Wisely (Canterbury Museum). Both specimens are in poor condition.

Pseudafroneta frigida n. sp.

Fig. 507.

FEMALE

Measurements

Carapace	length 2.91	width 1.92
Abdomen	length 3.00	width 1.83

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	2.25	0.75	1.83	2.00	1.08	7.91
2	2.08	0.75	1.83	1.75	0.92	7.33
3	1.83	0.67	1.50	1.58	0.83	6.41
4	2.08	0.67	2.08	2.08	1.17	8.08

Colour Cephalothorax, chelicerae and legs dusky yellow. Carapace with dusky margins and a dark median stripe. Abdomen with folium reduced to two thin dusky stripes on a pale ground.

Legs Femora 1 each with two prolateral spines. Legs 1,2,3,4 dorsal femoral spines absent. Tibiae 1,2 without apical spines, metatarsi spineless. Tibiae 3,4 and metatarsi with apical spines. Tm I could not be located on this specimen; from the Owenga female, Tm I = 0.60. All spines and hairs long and slender.

Vulva Fig. 507.

Type: Female holotype: Chatham Islands, Port Hutt, creek behind dunes, under log, 9.ii.54 R.R.Forster. Three male and one juvenile male paratypes (Otago Museum).

Records Chatham Islands, Owenga, ii.67, beating, G. W. Ramsay.

Pseudafroneta pallida n. sp.

Figs. 500, 520

MALE

Measurements

Carapace	length 1.20	width 0.80
Abdomen	length 1.20	width 0.68

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	0.92	0.36	0.88	0.72	0.48	3.36
2	0.80	0.32	0.72	0.64	0.48	2.96
3	0.68	0.28	0.52	0.52	0.36	2.36
4	0.80	0.28	0.84	0.72	0.48	3.12

Colour Cephalothorax, chelicerae and legs, yellow. Abdomen, grey with dorsal folium reduced to two longitudinal darker stripes with some white spots in a paler median stripe. Ventral region grey.

Legs Femora 1 with single prolateral spines, 2,3,4 spineless. Tibiae 1,2,3 apical spines absent, 4 present. Spines present on all metatarsi. All spines long and slender. Tm I = 0.43.

Palp Fig. 500.

FEMALE

Measurements

Carapace	length 1.12	width 0.80
Abdomen	length 1.20	width 0.80

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	0.92	0.32	0.76	0.68	0.52	3.20
2	0.80	0.32	0.72	0.60	0.44	2.88
3	0.68	0.24	0.52	0.56	0.40	2.40
4	0.88	0.32	0.76	0.68	0.52	3.16

Colour As in female, but legs with dusky annulae, and abdomen with folium more strongly-defined and with pale median band less marked.

Legs Chaetotaxy as in male. Tm I ?ffl = ffiffl

Types Holotype male, allotype female: Rotorua, near Waipa Mill, tree-fern detritus, 4.xii.75, A.D.Blest. (Otago Museum). Numerous paratypes.

Records Canterbury: Lake Janet, Mt. Grey, leaf-mould, 28.v.51, J. S. Dugdale. Auckland: Rotorua-Taupo Highway near Mt. Rainbow, deep litter, 2.xii.75, A.D.B.

Females from Rotorua and Lake Janet are indistinguishable, but the single male from Lake Janet shows small differences in the sclerotisation of the conductor; they are too trivial to justify describing this sample as a separate species.

Pseudafroneta taranakii n. sp.

Fig. 508.

FEMALE

Measurements

Carapace	length 2.33	width 1.58
Abdomen	length 2.67	width 2.25

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	2.33	0.67	1.92	1.83	1.17	7.92
2	2.00	0.58	1.75	1.58	1.00	6.91
3	1.83	0.58	1.42	1.42	0.83	6.08
4	2.25	0.58	2.08	1.67	0.92	7.50

Colour Cephalothorax, chelicerae and legs dark brown. Abdomen greyish-brown, folium faint and indistinct, with an anterior paler patch.

Legs Femora 1 with one prolateral and one dorsal spine. Femor 2,3,4 with a single dorsal spine. Tibiae 1,2 with spines weak, tibia 1 without apical spines, tibiae 2 with one apical spine, or without; metatarsi 1,2 without spines, 3,4 with apical spines. Tm I = 0.79.

Vulva Fig. 508.

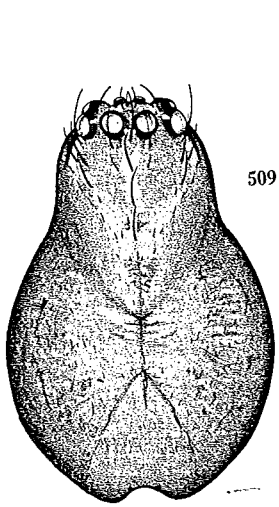
Type: Holotype female: Taranaki, Oakura, amongst stones in creek-bed, 11.vii.75, A. D. Blest (Otago Museum). One paratype female.

P.taranakii is closest to *P.perplexa*, but the scape is much larger and its attachment to the epigynal cuticle more strongly sclerotised than in any other *Pseudafroneta*, so that the unprepared epigyne resembles that of *Mynoglenes major*.

Novafroneta n. gen.

Spiders of medium size. Sub-ocular sulci well-developed, eyes relatively large, ocular area with strong forwardly-directed hairs. Legs with all spines and hairs long, giving the spiders a notably hairy appearance in life. Femur 1 with two prolateral spines close together in distal half, and one dorsal spine. Femur 2 with one dorsal spine, 3,4 with or without dorsal spines. Apical tibial spines always present on 3,4 sometimes present but weak on 1,2. Metatarsal spines absent. Presence or absence of spines erratic, even within species. Tm I = 0.45 – 0.70. Male palpal organ with small broad paracymbium, long, strongly-developed suprategulum, slender, membranous conductor arising solely from duct membrane without attachment to either tegulum or embolus. Tegular prominence absent. Embolus a long, narrow flattened sclerite without a distinct radical component, sperm duct convoluted within it. Female vulva with scape reduced or functionally absent, bursae extremely short and receptacula close to posterior margin. Posterior margin of scape fused to posterior margin of dorsal plate.

Type species: Novafroneta vulgaris n. sp.



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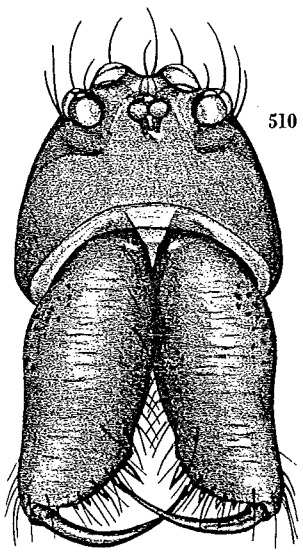

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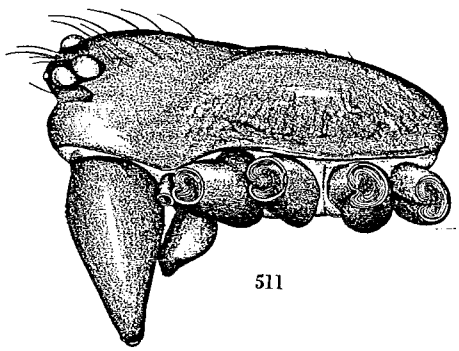

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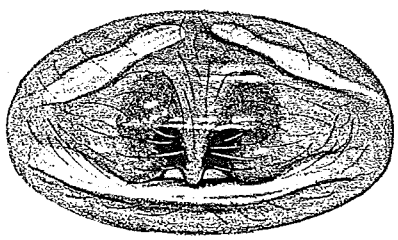

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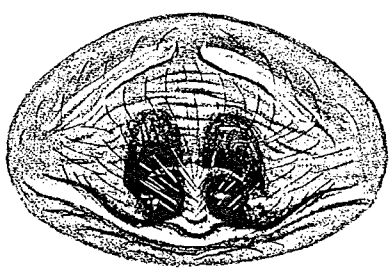

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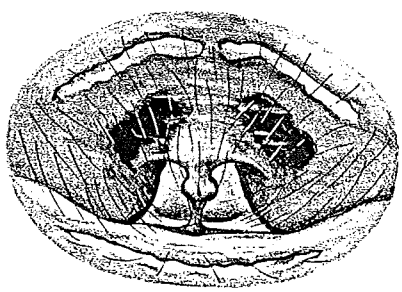


513

Figs. 509-511 *Novafroneta vulgaris* n. sp. carapace Fig. 512 *N. vulgaris* epigynum Fig. 513 *N. gladiatrix* n. sp. epigynum Fig. 514 *N. annulipes* n. sp. epigynum

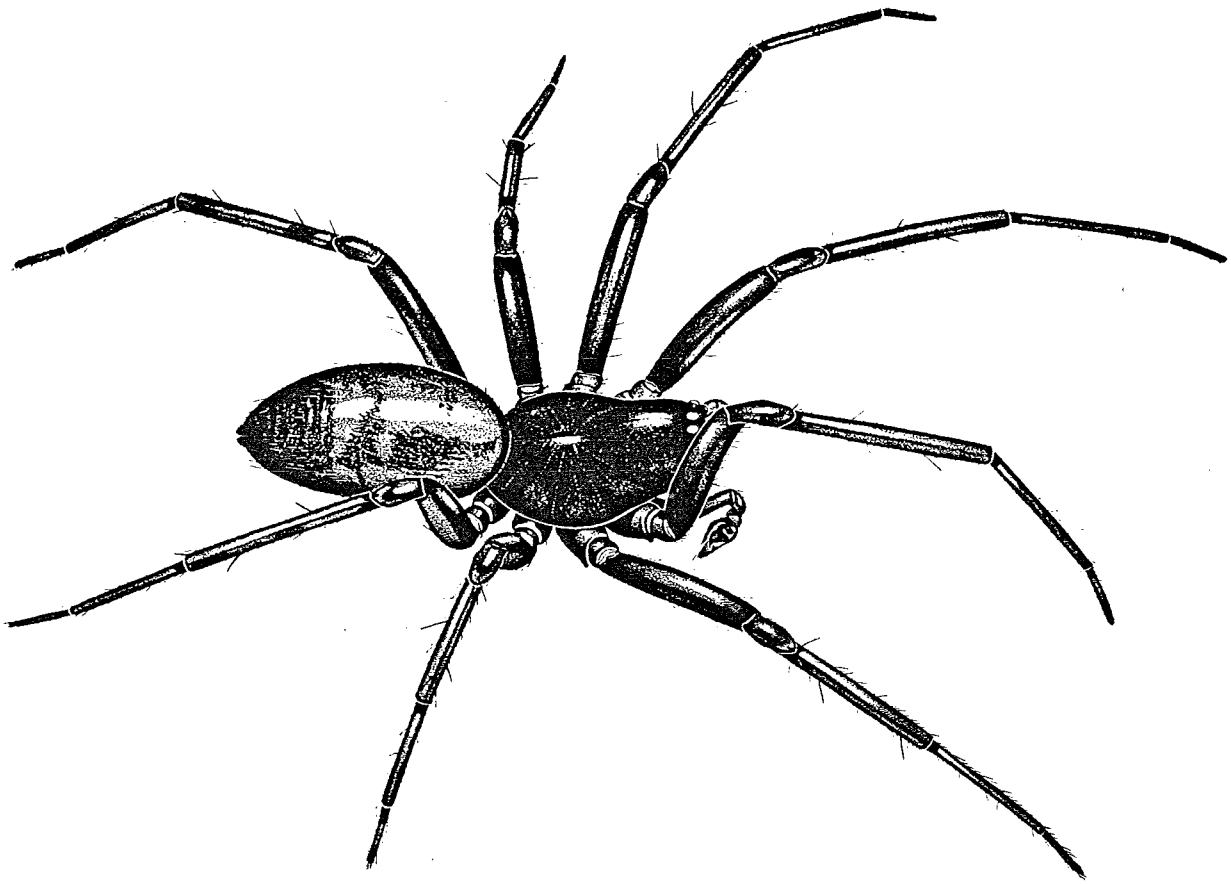


Fig. 515 *Novafroneta vulgaris* n. sp. male Peel Forest, Canterbury, niggerhead

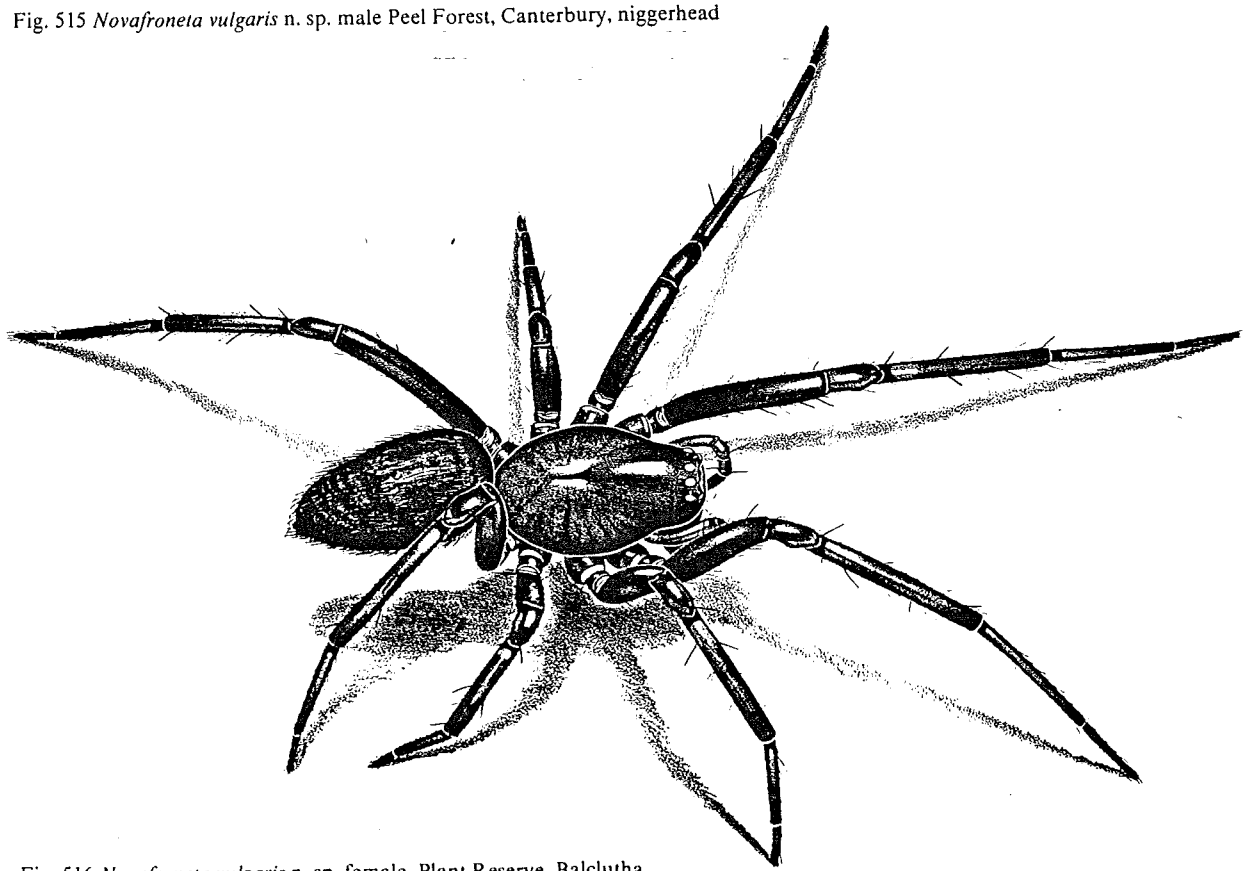


Fig. 516 *Novafroneta vulgaris* n. sp. female, Plant Reserve, Balclutha

Novafroneta vulgaris n. sp.

Figs. 509-512, 515-517, 521.

MALE

Measurements

Carapace	length 1.67	width 1.00	
Abdomen	length 1.67	width 1.08	

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	1.58	0.42	1.50	1.25	0.83	5.58
2	1.42	0.33	1.17	1.08	1.08	5.08
3	1.17	0.33	0.92	0.92	0.67	4.01
4	1.58	0.33	1.33	1.42	0.75	5.41

Colour Cephalothorax, (Figs. 509-511) chelicerae and legs, brown. Abdomen grey with an anterior paler patch, and a series of pale transverse bars posteriorly. (Fig. 515).

Legs Chaetotaxy as in genus description. Femur 1 with one prolateral spine only. 1,2 apical tibial spines absent. 3,4 dorsal femoral spines absent. Tm I = 0.49.

Palp Fig. 517.

FEMALE

Measurements

Carapace	length 1.75	width 1.08	
Abdomen	length 2.08	width 1.42	

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	1.83	0.50	1.50	1.42	0.92	6.17
2	1.67	0.42	1.42	1.25	0.75	5.51
3	1.25	0.42	1.00	0.92	0.67	4.26
4	1.67	0.42	1.42	1.42	0.92	5.85

Colour As for male. Abdomen grey with paler confluent blotches dorsally.

Legs As for male, but tibiae 1,2 with a single apical ventral spine each, and femora 3,4 each with a single dorsal spine. Tm I = 0.46.

Epigyne Fig. 512.

Vulva Fig. 521.

Types Holotype male, allotype female: Marlborough, Kaikoura, Kowhai Bush, in wet bush detritus, 20.vi.74, A.D.B. (Otago Museum).

Records North Island: Northland: Mimiwhangata, streambed, pitfall, 10.xii.70, J. T. Darby. Bay of Plenty: White Island, leaf litter, 6.xii.67, K. A. J. Wise. Hawkes Bay: Hynish, Kereru, 7.ii.54, J. S. Dugdale. Dannevirke, 12.iv.43, C.L.W. Manawatu: Palmerston North, 29.iii.60, C. W. O'Brien. Feilding, 20.xii.42, R. R. F. Wellington: Westmere, Wanganui, 12.xii.48, J. M. Moreland. Karori Hills, 6.vii.42, R.R.F. Waikanae, 6.ii.43, R.R.F. Kapiti Island, v.47, R.R.F. Wairarapa: Hills behind Gladstone, 20.vi.53, B. J. Marples. Mangareia, x.58, C.L.W. Mangareia, 14.xii.44, C.L.W. Featherstone, 16.xii.54. B. J. Marples. South Island: Nelson: District behind Nelson, 2.xii.53, B. J. Marples. Drummonds Flat, Takaka River, 27.iii.66, C.L.W. Marlborough: Kowhai Bush, Kaikoura, 30.vi.74, A.D.B. Kaikoura, littoral sedge, 21.v.74, A.D.B. Kaikoura, marram grass, 17.v.74, A.D.B. Keans Point, Kaikoura, sedge, 29.vi.74, A.D.B. Oaro Stream, 1.vi.52, J.S. Dugdale. South of Conway River, wet tussocks, 28.vi.74, A.D.B. Canterbury: Otira, Rolleston River, under stones, 2.viii.74, A.D.B. South Brighton under log, 30.viii.74, A.D.B. South Brighton, in litter, 27.xii.74, A.D.B. Arthur's Pass, Rough Creek, 12.xii.74, in *Raoulia*, A.D.B. Arthur's Pass, Bealey Track, under stones in *Nothofagus* 4.viii.74, A.D.B. Lake Rubicon, 19.xi.50, R.R.F. Kaituna Valley, 13.iv.67, R.R.F., C.L.W. Westland: Hokitika, Ruatapu, sphagnum, 13.vii.74, A.D.B. Hokitika, Takutai Spit, sandy tussock, beach driftwood, sedge tussock, 12.vii.74, A.D.B. Hokitika River, grass, 14.vii.74, A.D.B. Otago: Dunedin, 7.x.61, W. Poppelwell. Opoho Bush, 19.i.46, T. M. Smith. St. Clair, 14.i.68, R.R.F. Double Hill, Waitati, November, 1961, W. Poppelwell. Tapanui, June 1961, W. Poppelwell. Duntroon, 18.v.48, B. J. Marples. Paradise, 17.ii.52, B. J. Marples. Fiordland: Eglinton Valley, 19.i.75, under logs, 26.v.53, B. J. Marples. Eglinton Flat, 16.ii.66, R.R.F. Cascade Creek, under logs, 16.i.75, A.D.B. Cascade Creek, 15.ii.66, R.R.F. Key Summit Divide, fern detritus 12.ii.74, 18.i.75, A.D.B. Southland: Riverton, Otaitai Bush, 21.i.75, A.D.B. Colac Bay, 24.xi.70, R.R.F., C.L.W. Stewart Island: Halfmoon Bay, 22.xi.46, R.R.F.

N. vulgaris is a common species throughout the South Island, and records extend over the southern two-thirds of the North Island, north of which it appears to be replaced by *N. annulipes*. It shows much variation in colour pattern, from individuals with uniformly grey abdomens without markings, to samples taken in beech forest in Fiordland which in life appear black. Often the legs bear annular patterns. The genitalia, however, do not vary. *N. vulgaris* is found in wet habitats, including the supralittoral zone; on the west coast around Hokitika it is abundant under driftwood. It is also found commonly under logs and impacted stones in *Nothofagus* forest in the South Island. The egg-sac is spherical and suspended in the web.

Novafroneta annulipes n. sp.

Figs. 514, 518, 522.

MALE

Measurements

Carapace	length 1.58	width 1.08	
Abdomen	length 1.67	width 1.00	

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	1.50	0.42	1.42	1.25	0.75	5.34
2	1.42	0.42	1.33	1.08	0.67	4.92
3	1.08	0.33	0.92	0.83	0.58	3.74
4	1.42	0.42	1.33	1.33	0.58	5.08

Colour Cephalothorax, chelicerae and legs brown; carapace with some dusky striae, legs with dark annulae. Abdomen black with folium outlined in grey, and with a posterior series of paler transverse bars, and some whitish spots. Ventral region grey.

Legs Chaetotaxy as in genus description. Tm 1 = 0.55.

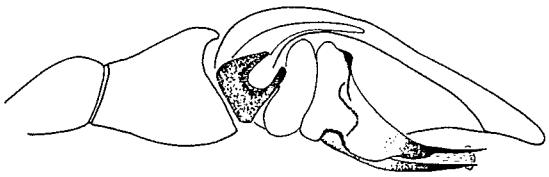
Palp Fig. 518.

FEMALE

Measurements

Carapace	length 1.58	width 1.17	
Abdomen	length 1.92	width 1.17	

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	1.42	0.50	1.25	1.17	0.75	5.09
2	1.33	0.42	1.08	1.08	0.67	4.58
3	1.08	0.42	0.92	0.92	0.58	3.92
4	1.58	0.50	1.33	1.25	0.83	5.49



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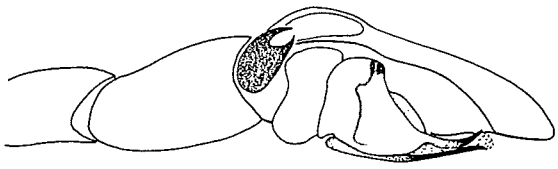

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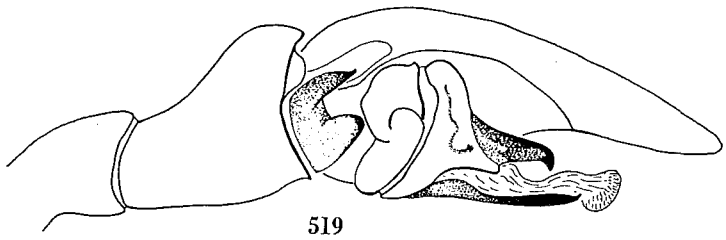

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Fig. 517 *Novafroneta vulgaris* n. sp. Fig. 518 *Novafroneta annulipes* n. sp. Fig. 519 *Novafroneta gladiatrix* n. sp.

Colour As in male. Abdomen with dark abdominal folium broken up by paler confluent blotches.

Legs As in male. Tm 1 = 0.52.

Genitalia Figs. 514.522.

Types Holotype male, allotype female: North Island: Rotorua, near Waipa Mill, under logs in pine detritus, 2.xii.75, A.D.B. (Otago Museum).

Records Auckland: Port Waikato, 450 yards inside Puriri Cave, 15.ix.57, P. Skinner. West Taupo: Upper Waihaha Valley, Conical Hill, 4.xi.53, R. K. Dell. N.W. Bay, Rotorua, Waipa Forest, tree-fern detritus, 4.xii.75, A.D.B. Rotorua-Taupo Highway, 15 miles from Rotorua, marsh detritus and grass, 2.xii.75, A.D.B. Heihepe, 11.vii.69, R.W. Hutton. Bay of Plenty: Mayor Island, litter, 8.xii.66, K.A.J. Wise. White Island, Pohutakawa litter near landing, 6.xii.66, K.A.J. Wise.

The limited records available suggest that *annulipes* replaces *vulgaris* in the northern third of the North Island. The single sample from White Island contained both species. *Annulipes* which I collected in the Rotorua area were occupying exactly the same forest and marshland niches used by *vulgaris* in South Island. The egg-sac is also spherical and suspended in the web.

Novafroneta gladiatrix n. sp.

Figs. 513,519,523.

MALE

Measurements

Carapace	length 2.00		width 1.42
Abdomen	length 2.33		width 1.42

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	1.92	0.58	1.83	1.83	1.00	7.16
2	1.75	0.58	1.67	1.50	0.92	6.42
3	1.42	0.50	1.25	1.17	0.83	5.17
4	2.00	0.50	1.83	1.83	0.92	7.08

Colour Cephalothorax, chelicerae and legs, brown. Abdomen grey with anterior paler patch, and a posterior series of pale transverse bars.

Legs Chaetotaxy as in genus description. Tm 1 = 0.69.

Palp Fig. 519.

FEMALE

Measurements

Carapace	length 2.17	width 1.50
Abdomen	length 2.17	width 1.75

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1.	2.00	0.50	1.83	1.58	0.92	5.83
2	1.92	0.50	1.67	1.50	0.92	6.51
3	1.50	0.42	1.17	1.25	0.83	5.17
4	2.00	0.50	1.83	1.83	0.92	7.08

Colour Cephalothorax, chelicerae and legs as in male. Abdomen grey with two longitudinal series of paler spots.

Legs As in male. Tm 1 = 0.52.

Genitalia Figs. 513, 523. The vulva is divided posteriorly by a deep medial septum, and there is a pronounced scape-like structure (paratype).

Types Holotype male, allotype female: Canterbury, Arthur's Pass, Temple Basin, in tussock detritus and under stones, 24.xi.-12.xii.74., A.D.B. (Otago Museum).

Records Canterbury: Cooper's Creek, 1.xii.48, R.R.F. Lake Janet, under logs, 31.vii.49, R.R.F. Fiordland: Eglinton Flat, 16.ii.66, R.R.F. Cascade Creek, under logs, 17.i.75, A.D.B.

The medial septum of the vulva distinguishes this species from *annulipes* and *vulgaris;* although in this character the species seems distant from its congeners, in all others it resembles them closely. Single specimens have been taken under logs in *Nothofagus* forest amongst *N. vulgaris,* but the type series from tussock detritus is the only large population encountered.

Novafroneta parmulata n. sp.

Figs. 524-525.

FEMALE

Measurements

Carapace	length 1.32	width 1.04	
Abdomen	length 2.00	width 1.20	

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	1.36			missing		
2	1.20	0.75	1.04	0.84	0.88	4.66
3	1.04	0.67	0.76	0.88	0.60	3.95
4	1.28	0.67	1.20	1.12	0.60	4.87

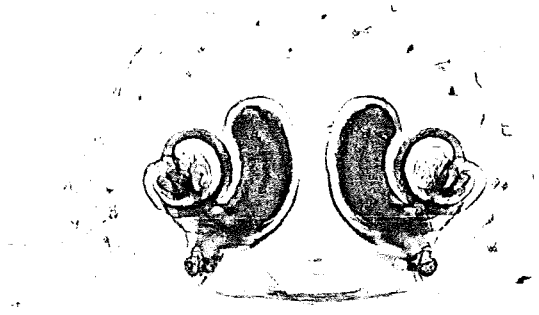
Colour Cephalothorax, chelicerae and legs brown. Abdomen grey with two longitudinal series of pale spots.

Legs All spines strong and very long. Chaetotaxy as in genus description, dorsal femoral spines present on all legs.

Vulva Fig. 525. The presence of a rudimentary scape with a notch distinguishes this species from *vulgaris* and *annulipes*, and the absence of a median vulval septum from *gladiatrix*.

Type Holotype female. Dawson's Falls, Mount Egmont, 23.ii.67, C.L.W. (Otago Museum).

Records Nelson: Riwaka Valley, 24.iii.66, C.L.W. The vulva (Fig. 524) of this specimen is close to that



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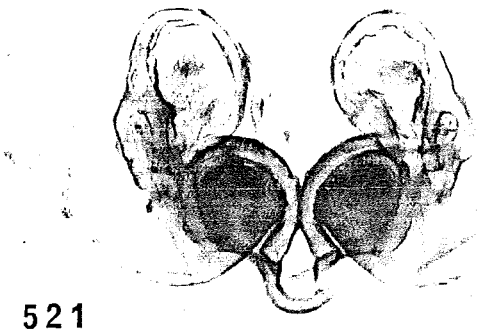

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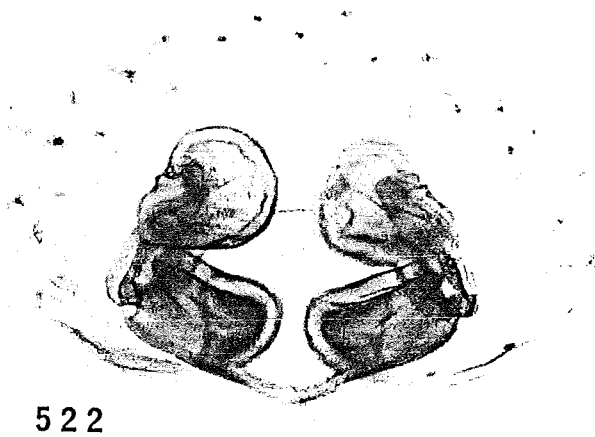

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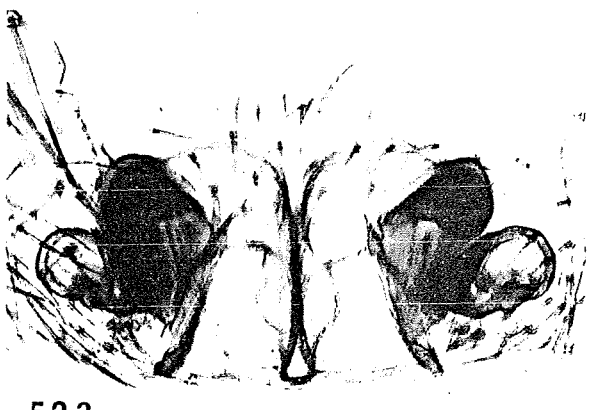

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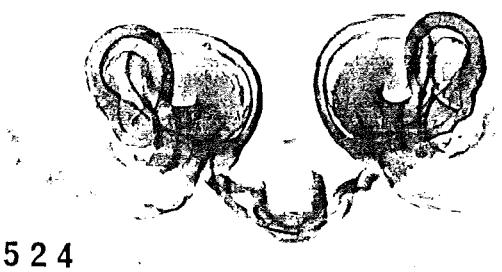

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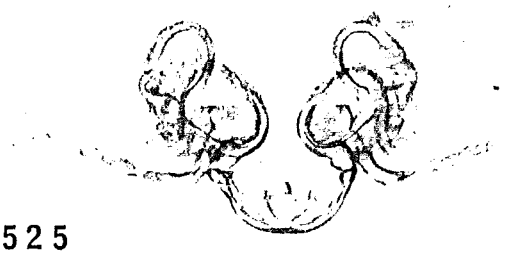

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Vulvae Fig. 520 *Pseudafroneta pallida* n. sp. Fig. 521 *Novafroneta vulgaris* n. sp. Fig. 522 *N.annulipes* n. sp. Fig. 523 *N.gladiatrix* n. sp. Fig. 524-525 Fig. 524 *N.parmulata* n. sp. Nelson, Riwaka Valley. Fig. 525 Dawson's Falls, Mount Egmont (female holotype)

of the female from Mt. Egmont. The remainder of the specimen was accidentally destroyed, but it was noted that the chaetotaxy was identical for both individuals.

The particular interest of this species lies in the presence of a well-preserved scape with a socket, linking the genus to *Mynoglenes* on the one hand, and *Pseudafroneta* on the other.

Megafroneta n. gen.

Medium-sized spiders. Subocular sulci strongly-developed. Chaetotaxy diverse in the two known species (see species descriptions). Male palp with broad paracymbia; suprategula short, outwardly directed and obtuse; tegular prominence broad and obtuse, its tip level with that of the suprategulum. Embolus broad at the base, narrowing to a spiniform tip, conductor small, broadly attached to tegulum and to the base of the embolus, duct membrane short, so that the embolic division is tightly bound to the tegulum. Female vulva with a long, highly developed median scape, and two short, lateral accessory scapes. The relationship of the dorsal plate to the scape is uncertain, but their posterior margins appear to be fused.

Type species *Megafroneta elongata* n. sp.

But for the extraordinary vulva of the only known female, the two species could be placed in *Parafroneta*, for the palpal anatomy differs only slightly from the arrangement in that genus, whose chaetotaxy is equally diverse.

Megafroneta elongata n. sp.

Figs. 526-530.

MALE

Measurements

Carapace	length 2.42	width 1.42	
Abdomen	length 3.16	width 1.50	

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	2.67	0.75	2.50	2.33	1.17	9.42
2	2.50	0.75	2.33	2.16	1.08	8.82
3	2.08	0.58	1.67	1.83	0.92	7.08
4	2.58	0.67	2.33	2.33	1,17	9.08

Colour Cephalothorax, chelicerae, dark brown. Legs yellow-brown, femora dark, apical quarter of tibiae black. Abdomen in poor condition, with contents shrunken away from cuticle, so that no pattern is discernible.

Legs Femora 1 with single prolateral spine only, Femora 2,3,4 without dorsal spines. Tibiae 1,2,3 without apical spines, 4 with apical spines, all metatarsi spineless. Tm 1 = 0.54 (missing; position identified uncertainly from scar).

Palp Figs. 526, 527, 528. The sperm duct is tightly coiled in the course of its passage through the embolus.

FEMALE

Measurements

Carapace	length 2.42	width 1.58	
Abdomen	length 3.16	width 1.58	

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	2.75	0.67	2.42	2.33	1.17	9.34
2	2.50	0.67	2.25	2.08	1.08	8.58
3	2.08	0.58	1.67	1.67	0.92	6.92
4	2.50	0.58	2.25	2.33	1.08	8.74

Colour As in the male. The abdomen is well-preserved, and it is pale greyish brown, without a dorsal folium or any pattern other than two dark lateral stripes which extend dorsally at the end of the abdomen to give it a black tip divided by a light median stripe.

Legs Femora 1 with one prolateral and one dorsal spine (the dorsal spines are missing, but their existence can be deduced from the presence of dorsal spines on femora 2,3,4. A scar in the right position can just be seen on the left femur). Tibia 1 with a single apical spine, 2,3,4 with apical spines, all metatarsi without spines. Tm 1 = 0.61. Legs in very poor condition, 2 being detached and fragmentary on both sides.

Epigyne Fig. 529, 530. Unlike that of any other mynoglenine species. The enormously developed scape and the two lateral accessory scapes project from the abdomen. The latter are reminiscent of the lateral accessory scapes of the linyphiine *Laetesia*. In view of the fragile state of the unique specimen it was thought to be inadvisable to prepare the vulva.

Types Holotype male, allotype female. Nelson: Mount Arthur Track, 3200-3500 ft. by beating, 1944, J. T. Salmon (National Museum).

The long legs, striking colour pattern, and the fact that this unique pair was taken by beating all suggests that *M.elongata* probably builds its snare in vegetation well above ground. If this is the case, it is the only New Zealand mynoglenine to do so, with the possible exception of *Mynoglenes tegulata* and *Poecilafroneta caudata*.

Megafroneta gigas n. sp.

Figs. 531-532.

MALE

Measurements

Carapace	length 3.58	width 2.33	
Abdomen	length 3.92	width 2.00	

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	3.33	1.17	3.25	2.92	1.33	12.00
2	3.00	1.08	2.83	2.67	1.17	10.75
3	2.50	0.83	2.25	2.17	1.00	8.75
4	3.33	1.00	3.00	2.92	1.17	11.42

Colour Cephalothorax, chelicerae and legs orange-brown. Abdomen dark grey, with a barely discriminable darker dorsal folium, and a pair of white spots at the mid-point.

Legs Femora 1 with one prolateral and one dorsal spine, femora 2,3,4 with single dorsal spines. Tibiae 1,2 without single dorsal spines. Tibiae 1,2 without apical spines, 3,4 with apical spines. All tibiae with dorsal and ventral spines, numerous on tibiae 4. All metatarsi without apical spines, but with dorsal and ventral spines, weak on 1,2, strong on 3,4. All hairs long. Tm I was not located.

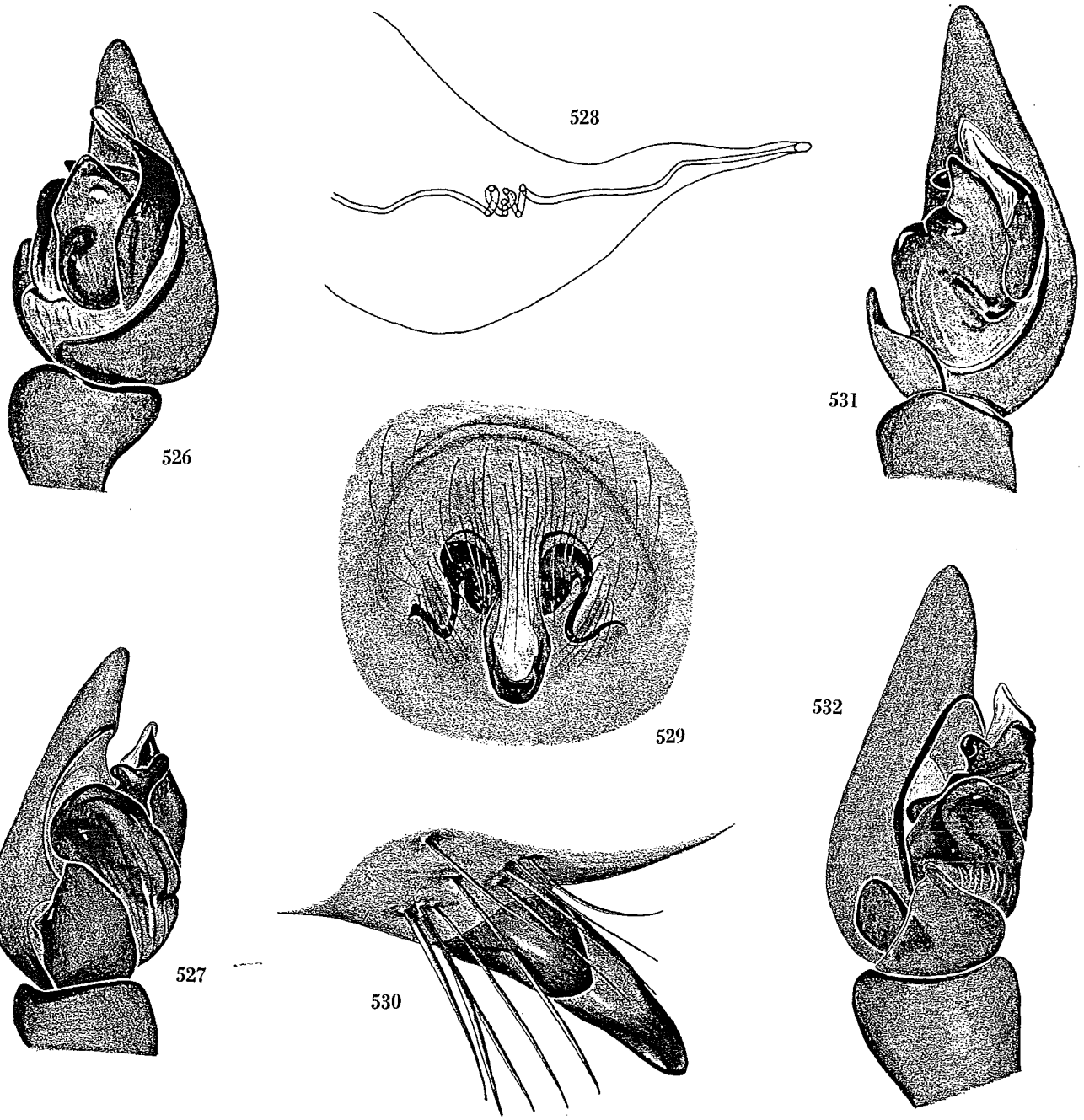
Palp Fig. 531, 532.

Type Holotype male: Otago: Lake Ohau, 1950 (Otago Museum).

Despite the quite different chaetotaxy, the palp of *M.gigas* is very close to that of *M.elongata*, differing most notably in the form of the paracymbium and the narrower embolus, and there is no doubt that they should be placed in the same genus.

Protoerigone and Parafroneta

These genera are closely related, and but for the specialisation of the subocular sulci in *Protoerigone* and the form of the scape could properly be united. *Protoerigone*, however, is the only mynoglenine genus to have evolved sulci which show substantial sexual dimorphism, and which in the males form deeply invaginated sacs very similar to those found in erigoninae with post-ocular sulci. The



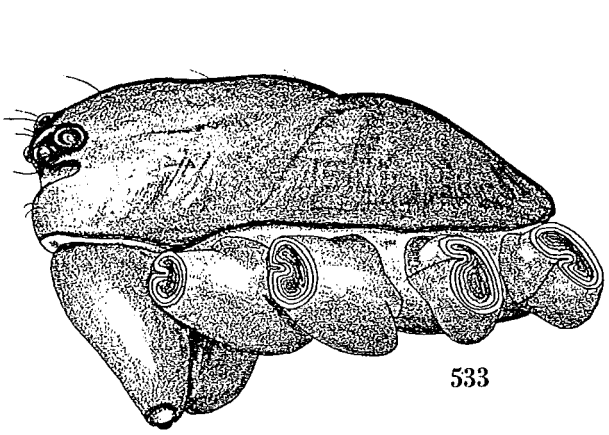
Figs. 526-530 *Megafroneta elongata* n. sp. Figs. 526, 527 palp Fig. 528 embolus of left palp, dissected, from whole mount Fig. 529 epigynum Fig. 530 epigynum from side, to show the strongly-projecting scape Figs. 531-532 *Megafroneta gigas* n. sp. palp.

phylogenetic significance of this development, and the detailed anatomy of the sacs is considered separately in the Discussion. The genitalia of *Protoerigone* approach *Parafroneta,* and are quite close to those of *Parafroneta persimilis* and *P.ambigua* in particular.

Protoerigone n. gen.

Small spiders. Carapace with marked sexual dimorphism. Female subocular sulci shallow troughs, forwardly-directed, of the typical mynoglenine kind. Male subocular sulci more laterally directed, and produced into deeply invaginated sacs with strongly-sclerotised margins. Male head very slightly raised. Tm I = 0.50 – 0.70. Male palp: suprategulum a strongly sclerotised hook, conductor small and simple with attachment to tegulum and base of embolus, embolus simple, sinuous, without a distinct radical component, strongly sclerotised. Palpal tibia short and with marked apical dilation. Vulva: bursae simple, short. A strong posterior epigynal socket represents the scape, which is vestigial, but persists as a medial, sclerotised bar. The tip of the scape is enfolded by the posterior margin of the dorsal plate, but they are not fused (Figs. 543, 545). This character is most clearly seen in *P.obtusa.* The exoskeleton, including the abdominal cuticle, has a tough, leathery consistency which is at once apparent when the spiders are dissected.

Type species *Protoerigone otagoa* n. sp.



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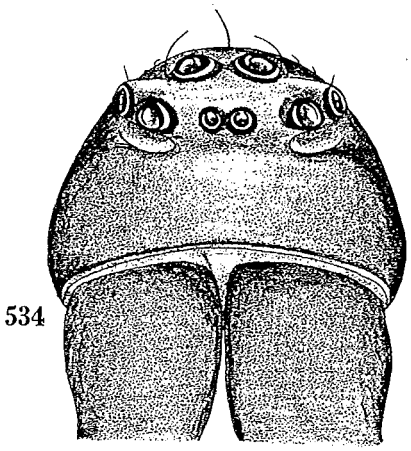

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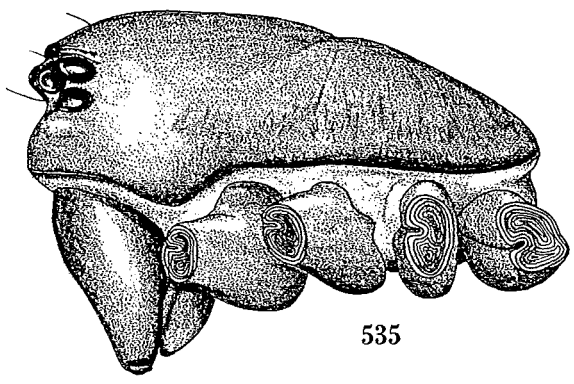

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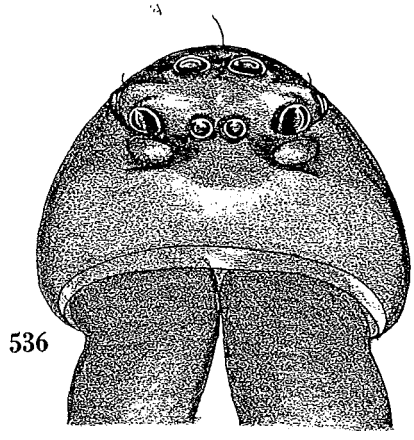

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Figs. 533-536 *Protoerigone otagoa* n. sp. Figs. 533,534 female carapace Figs. 535,536 male carapace

Protoerigone otagoa n. sp.

Figs. 533-536, 537, 539, 541-543.

MALE

Measurements

Carapace	length 1.88	width 1.48	
Abdomen	length 2.04	width 1.08	

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	1.36	0.48	1.32	1.20	0.80	5.16
2	1.32	0.44	1.12	1.04	0.68	4.60
3	1.12	0.48	0.88	0.84	0.52	3.84
4	1.44	0.48	1.40	1.32	0.84	5.48

Colour Cephalothorax (Figs. 535, 536), chelicerae, dark brown, carapace with dark striae. Abdomen with well-defined, black, dentate dorsal folium, with a pale median band and white spots.

Legs Femora 1 with single prolateral spine only, 2,3,4 femora without spines. Fibiae 1,2 without apical spines, 3,4 with apical spines Metatarsi 1,2 without spines, metatarsi 3,4 with apical spines. All spines strong. Tm I = 0.65.

Palp Figs. 537, 539.

FEMALE

Measurements

Carapace	length 1.60	width 1.20
Abdomen	length 2.80	width 1.52

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	1.32	0.44	1.20	1.04	0.72	4.72
2	1.20	0.44	1.20	0.92	0.64	4.40
3	1.12	0.40	0.80	0.80	0.56	3.68
4	1.48	0.44	1.28	1.24	0.72	5.16

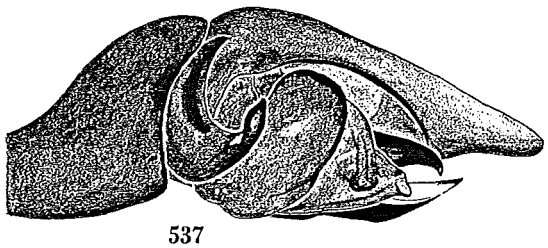
Colour As in the male. Cephalothorax Figs. 162, 163.

Legs Femora as in the male. Tibiae 1 without apical spines, tibiae 2,3,4 with apical spines. Metatarsi 1,2 without spines, metatarsi 3,4 with apical spines. Tm I = 0.67.

Genitalia Figs. 541, 542, 543.

Types Holotype male, allotype female: Otago, Dunedin, Leith Saddle, litter at margin of bush, 6.xii.74, A.D. Blest (Otago Museum).

Records Otago. Middlemarch, East of River, 10.iv.71, T. R. Beatson. Whiskey Gully, Tapanui, vi.61, W. T. Popplewell. Mt. Cargill, 25.ix.65, C.L.W. Dunedin, Leith Saddle, 6.xii.74, A.D.B. Between Bushey and Goodwood, on niggerhead, 20.x.66, C.L.W. Allan's Beach, 6.xi.65, C.L.W. Flagstaff, Dunedin, pitfall trap, 20.xi.-6.xii.70, C.L.W. Rock and Pillar, west of Middlemarch, pitfall trap, 800 ft, matagouri scrub, 16.xi.68, J. Child.



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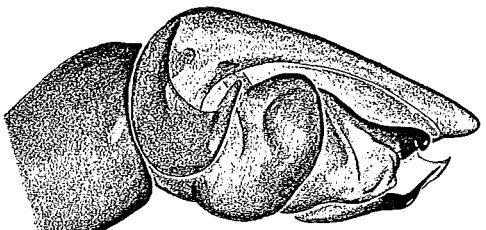

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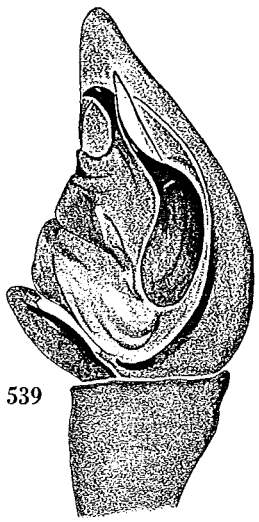

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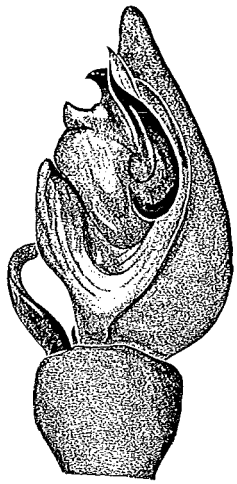

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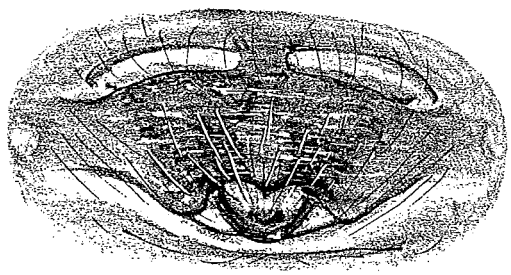

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Figs. 537, 539, 541 *Protoerigone otagoa* n. sp. Figs. 537, 539 palp Figs. 538, 540 *P.obtusa* n. sp. palp

Protoerigone obtusa

Figs. 538, 540, 544-545.

MALE

Measurements

Carapace	length 1.36	width 0.92	
Abdomen	length 1.68	width 0.88	

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	1.08	0.32	1.00	0.88	0.64	3.92
2	1.00	0.32	1.88	0.84	0.64	3.68
3	0.80	0.28	0.68	0.60	0.52	2.88
4	1.08	0.32	0.96	0.96	0.64	3.96

Colour As in *P.otagoa.*

Legs As in *P.otagoa.* Tm I = 0.56.

Palp Figs. 538, 540. The suprategulum and embolus are both shorter than in *P.otagoa*, and the shape of the paracybium is slightly but consistently different.

FEMALE

Measurements

Carapace	length 1.52	width 1.08
Abdomen	length 1.68	width 0.88

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	1.28	0.48	1.12	1.08	0.80	4.75
2	1.20	0.48	1.00	0.96	0.72	4.36
3	1.00	0.40	0.84	0.80	0.60	3.64
4	1.32	0.44	1.20	1.20	0.80	4.96

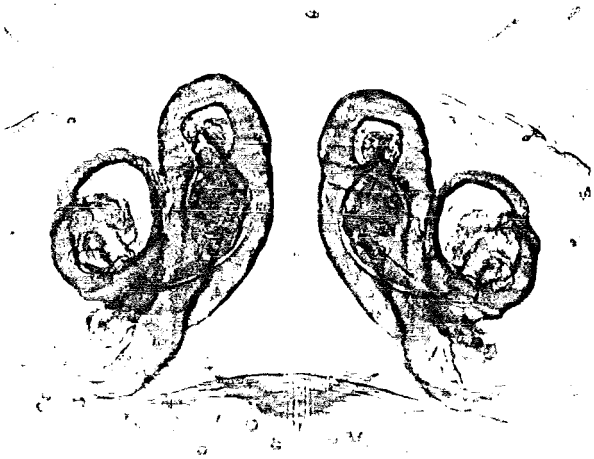
Colour As in male.

Legs As in *P.otagoa.* Tm I = 0.53.

Vulva Fig. 544, 545. The small differences in proportion between *obtusa* and *otagoa* are consistent in the samples available, and the heavier sclerotisation of the socket in *obtusa* is also constant, and can be seen if the epigynes of the two species are compared.

Types Holotype male, allotype female: Halfmoon Bay, Stewart Island, vi.50, O. Allen. Paratypes (Otago Museum).

Records N.E. Big Cape, S.W. Stewart Island, 7.xi.68, J. McBurney. S. Peak, Big Cape Is. 11.xi.68, J. McBurney. Ditto, 12.ii.69, B. A. Kuschel. Owen Island, S.E. Stewart Island, 29.i.55, R. K. Dell & B. A. Holloway. Stewart Island, Halfmoon Bay, 22.ii.59, litter, A. Chapman. Halfmoon Bay, 10.iii.48, O. Allen. Rabbit Island, S.W. Stewart Island, 21.v.56, R. K. Dell. Southland. Bluff, leaf-



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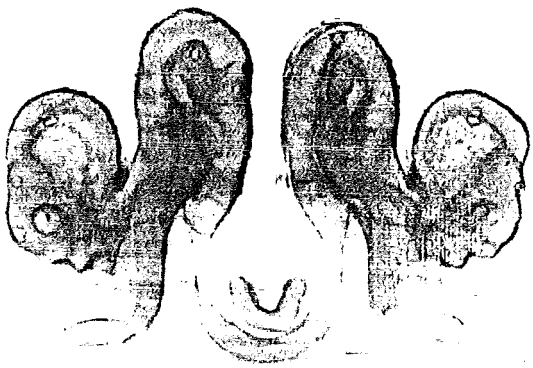

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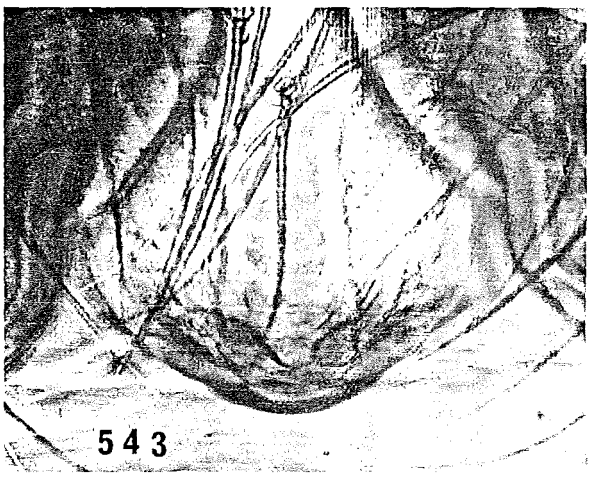

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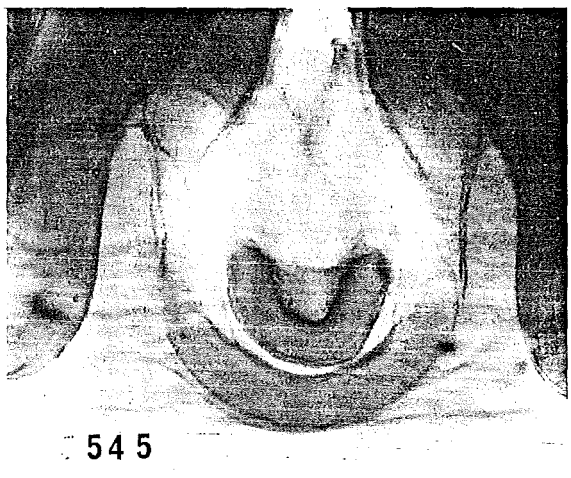


545

Vulvae Figs. 542, 543 *Protoerigone otagoa* n. sp. Figs. 544,545 *P. obtusa* n. sp. In each case the bottom figure shows the tip of the scape, and the strong fold of the dorsal plate which surrounds it

mould, 27.xi.46, R.R.F. Native Island, leaf litter, 18.i.70. Otago. Balclutha, Plant Reserve, 4.iv.60, R.R.F.

Parafroneta n. gen.

Small to medium-sized spiders. Carapace without marked sexual dimorphism. Sub-ocular sulci well-developed. Chaetotaxy highly variable, in *P. marrineri* and *P. confusa* unstable within species. Tm I = 0.45-0.65. Male palp: typically long and narrow, without marked apical dilation. Palpal organ much reduced, extremely simple, suprategulum weakly-developed, straight *(P. marrineri, confusa, minuta, subantarctica)*, or obtuse and curved outwards *(ambigua, persimilis)*. Conductor a short, translucent, simple membranous process, often difficult to resolve in the undissected palp, with attachment to the tegulum and the base of the embolus. Embolus a simple sclerite with no distinct radical component. Vulva: bursae simple, epigyne with a rudimentary posterior socket, variously developed, not forming part of a distinct scape.- Posterior margin of epigynal cuticle fused to dorsal plate. Exoskeleton not tough or leathery.

Type species *Mynoglenes marrineri* Hogg.

Parafroneta marrineri (Hogg)

Mynoglenes marrineri Hogg 1900. Subantarctic Is. N. Zeal. 1:165. Rainbow 1917. Aust. Antarctic Exp. 1911-1914 Sc. Rep. 5 (1):6. Dalmas 1917 Ann.Soc. ent. Fr. 86:404. Hickman 1939. BANZ Antarctic Res. Exp. 1929-1931. Series B. 4 (5):160.

Figs. 550, 552-553.

MALE

Measurements

Carapace	length 2.42	width 1.50	
Abdomen	length 2.92	width 1.50	

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	2.42	0.67	2.33	2.25	1.33	9.00
2	2.17	0.67	2.00	2.08	1.25	8.17
3	2.00	0.58	1.67	1.83	1.00	7.08
4	2.42	0.67	2.50	2.58	1.50	9.67

Colour Cephalothorax, chelicerae and legs orange. Abdomen grey, with faint grey posterior markings representing the dorsal folium.

Legs Femora I with two prolateral and one dorsal spine. Femora 2,3,4 with two dorsal spines. Tibiae 1-4 with numerous strong spines, all with apical spines. Metatarsi 1,2 without spine, 3,4 with spines including apical spines. Tm I = 0.63, trichobothrium short.

Palp Fig. 550.

FEMALE

Measurements

Carapace length 3.17 width 1.92
Abdomen length 3.33 width 1.92

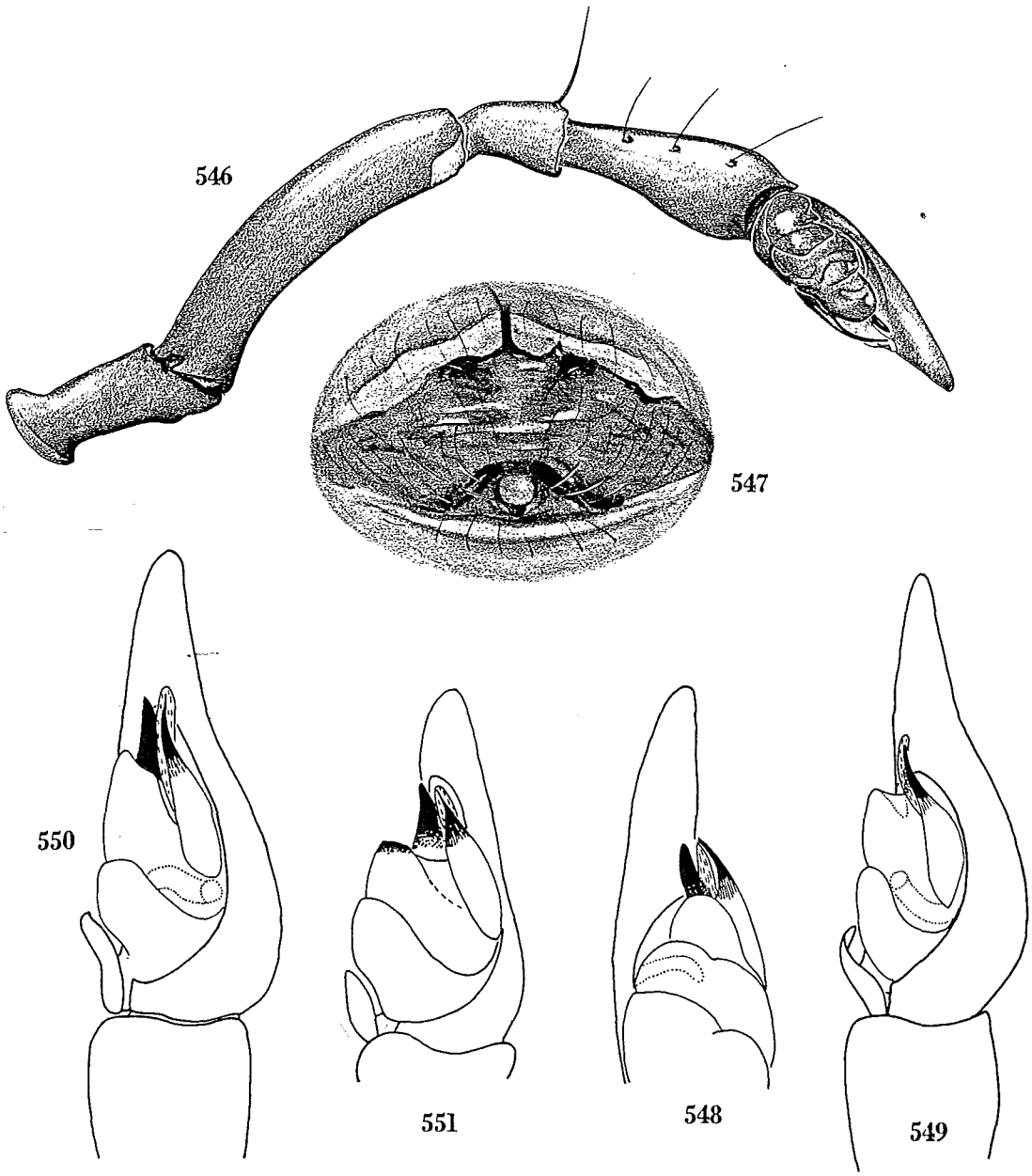
Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	3.08	1.00	2.92	2.67	1.58	11.25
2	2.83	1.00	2.50	2.50	1.50	10.33
3	2.58	0.83	2.00	2.08	1.17	8.66
4	2.92	0.83	2.92	2.83	1.50	11.00

Colour As in male. Carapace with forwardly directed hairs between eyes and fovea.

Legs Femora I with three prolateral and one dorsal spine. Femora 2-4 with one or two dorsal spines. Tibiae 1-4 with spines strong, all tibiae with apical spines. Metataris 1,2 without apical spines, 3,4 with apical spines. Tm I = 0.60, trichobothrium short.

Vulva Figs. 552, 553.

Types Holotype male, allotype female: labelled 'Campbell (?) *Mynoglenes marrineri* Hogg.' No other data. The specimens are in poor condition, with legs and spines missing, but the genitalia are well preserved. The descriptions above have been made from a pair taken at Beeman's Point, Campbell Island, 10.i.69. P. M. Johns.



Figs. 546-549 *Parafroneta confusa* n. sp. Fig. 546, 548 palp from outer lateral aspect Fig. 549 palp from ventral aspect Fig. 547 epigyne Fig. 550 *P.marrineri* (Hogg) palp from ventral aspect Fig. 551 *P.minuta* n. sp. palp from ventral aspect

Records Macquarie Island. North head of coast, ex *Azorella*, 8.xii.60. ex *Poa foliosa* Green Gorge, 4.vii.60. Antipodes Islands. Stella Bay. Reef Point, under stones in penguin colony, 13.ii.69. South Beach, Reef Point, *Poa foliosa*, 6.ii.69. Anchorage Bay, Reef Point, litter under large clump of *Stilbocarpa* 11.ii.69. Reef Point, under boulders at high tide level, 6.ii.69. North Plain, 100m soil and debris 11.ii.69. Campbell Island. 3.ix.44, under timber, 29.v.45, 13.iv.46, 16.iii.46, below Mt. Dumas South Coast, 17.xi.45. on dead bird, 5.vi.45. Venus Bay, tussock, 2.ii.63. Station No. 3 in shed, 29.v.74. Courejolles, under stones, 8.x.45, in scrub, 17.iv.45, 15.iv.44. Lookout Bay, litter 69/8, 16.ii.69. Beemans Point, beating tussock on shore, 10.i.69. Lookout Bay, 14.i.69. Shoal Point, tussock, 1.xii.62, 30.iv.45, 20.vii.45. Tucker Cove, under old timber, 21.xi.47. Beeman Cove, 3.iii.62. Beeman Hill, 50-100m, moist lichen, 9.i.69. Mt. Dumas, 304m, 4.x.63. Beeman, Perseverance Harbour area, 1958-1959 Party. Station no. 3., 10.vii.74. Courejolles Point, sample No. 2, Berlese funnel, 13.ix.47. Mt. Lyall, 180m, mat plants 10.i.69. Lookout Bay, litter 16.i.69. Garden Cove, leaf mould from rock at H.T.N., 3.vii.47. Auckland Islands. Ewing Island, 20.xii.42. Station 8. vii.43. Tandy Inlet, 28.i.45. Ranui Cove, Port Ross, under logs and stones on forest floor, 8.xi.54. Ranui Cove, Port Ross, 25.ii.66. Deas Head, Rata bark, 19.i.63. Adams Island, Northside main divide, 550 m, tussock, Berlese funnel, 24.i.66.

Much of the material of *P.marrineri* is in poor condition, and with the exception of the Campbell Island sample consists of only a few specimens. All, however, appear to belong to the same species. The chaetotaxy is highly variable, and Campbell Island specimens may have more or fewer leg spines than the individuals described here. The species is close to *P.confusa* from the mainland, but it has relatively longer legs (length of leg 1/carapace length for *P.marrineri* = 3.50 – 3.72, and for *P.confusa* = 2.40 – 2.60). Differences between the palps are noted under *P.confusa*. Some Campbell Island specimens, however, have relatively short legs approaching the ratios for *P.confusa*, and in the absence of adequate biometrical data the difference cannot be regarded as diagnostic.

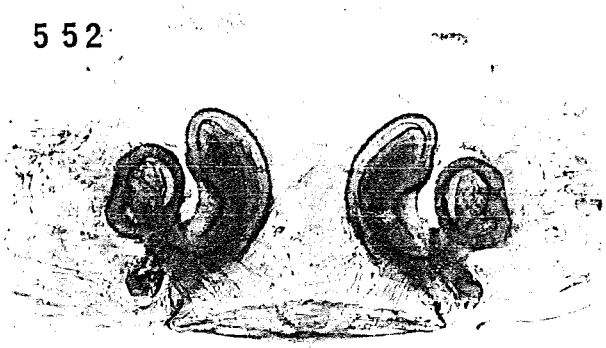
Parafroneta confusa n. sp.

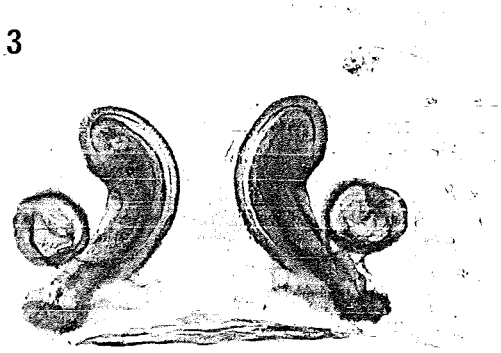
Figs. 546-549, 554-556

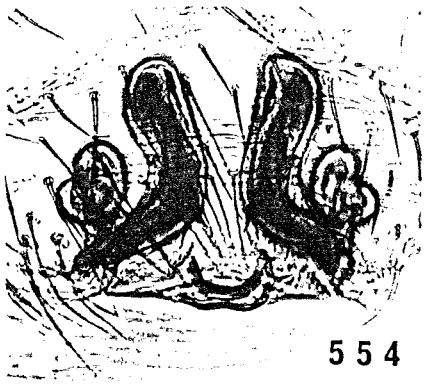
MALE

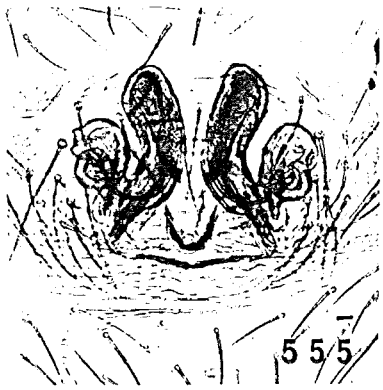
Measurements

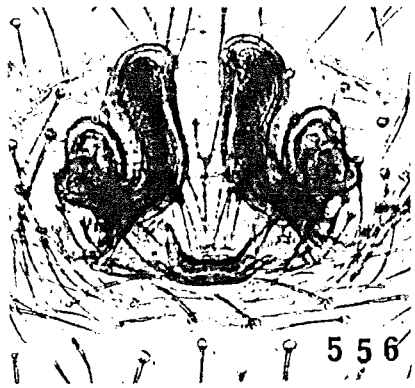
Carapace	length 2.83	width 1.92
Abdomen	length 3.17	width 1.50











Vulvae Fig. 552,553 *Parafroneta marrineri* (Hogg) Fig. 552 Auckland Islands Fig. 553 Campbell Islands Figs. 554-556 *P.confusa* n. sp. Fig. 554 Hokitika Fig. 555 Moanatuatua Swamp, N.Island Fig. 556 Canterbury, Arthur's Pass

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	2.25	0.75	1.83	1.58	0.92	7.33
2	2.00	0.75	1.58	1.50	0.75	6.58
3	1.58	0.67	1.25	1.25	0.67	5.42
4	2.00	0.75	1.75	1.67	0.92	7.09

Colour Cephalothorax, chelicerae dark brown; legs brown with annulae; abdomen grey with a broken dorsal folium with a pale median stripe and white spots.

Legs Femora 1 with a prolateral spine only; 2,3,4 without spines. Tibiae 1,2 without apical spines, other spines reduced to hairs. Tibiae 3,4 with apical spines. Metatarsi 1-3 without spines, 4 with apical spines. Tm I = 0.62.

Palp Figs. 546, 548, 549.

FEMALE

Measurements

Carapace	length 2.58	width 1.75
Abdomen	length 4.00	width 2.50

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	1.92	0.75	1.75	1.50	0.83	6.75
2	1.58	0.67	1.42	1.33	0.75	5.75
3	1.33	0.58	1.08	1.00	0.67	4.66
4	1.75	0.67	1.67	1.58	0.83	6.50

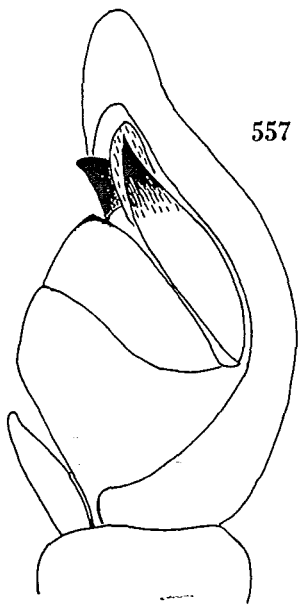
Colour As in male, but paler.

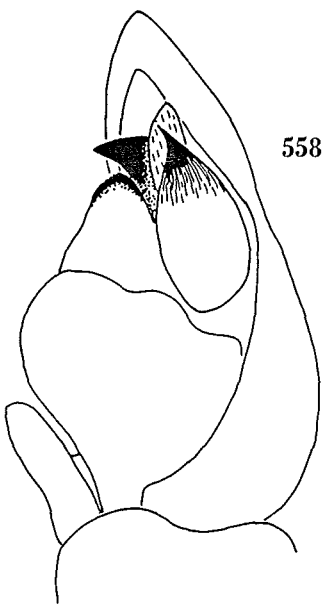
Legs Femora 1 with one prolateral spine, 2,3,4 without spines. Tibiae 1,2 with weak spines, and no apical spines. Tibiae 3,4 with apical spines. Metatarsi 1,2 without spines, 3,4 with apical spines. Tm I = 0.61.

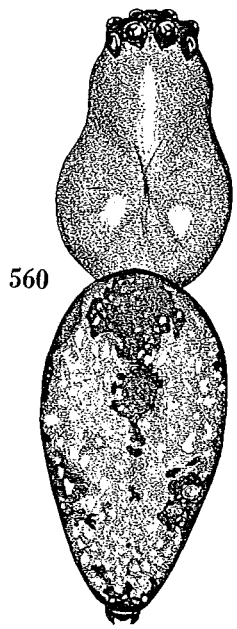
Genitalia Figs. 547 (allotype), 554-556.

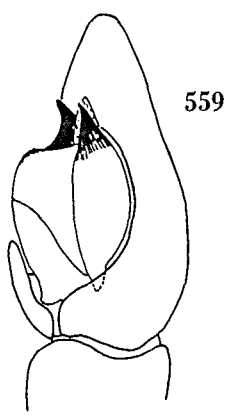
Types Holotype male, allotype female: Canterbury, Deans Bush Christchurch, in wet flax litter, 24.vii.74, A.D. Blest (Otago Museum).

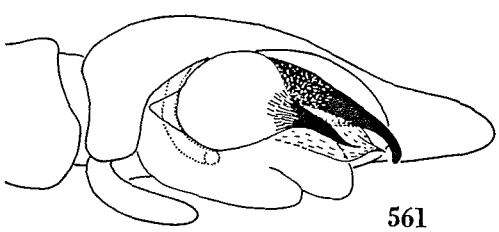
Records North Island. Auckland. Rotorua-Taupo Highway, pine detritus, 2.xii.75, A.D.B. South Is-

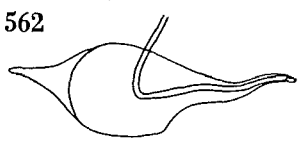






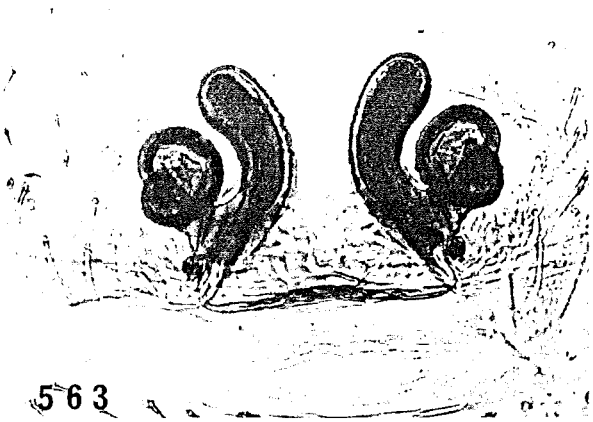


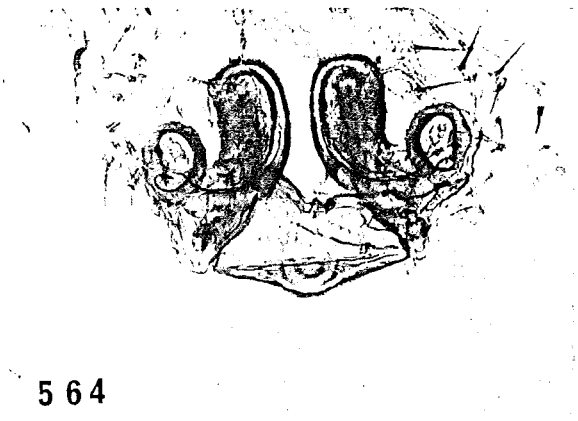


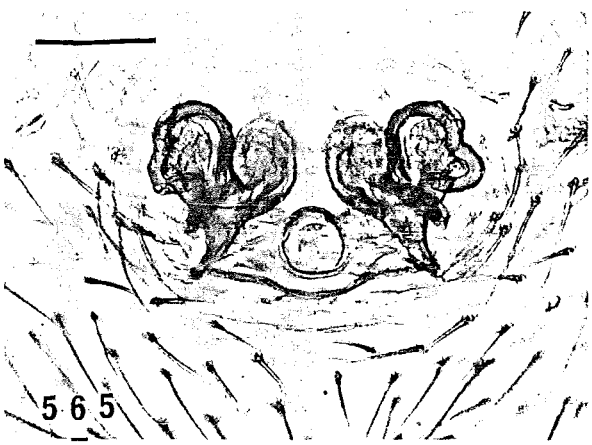


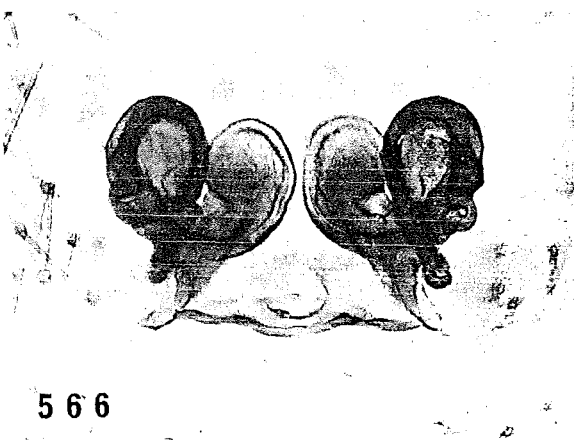
Figs. 557-559,561 Palps from ventral aspect. Fig. 557 *Parafroneta persimilis* n. sp. Fig. 558 *P.ambigua* n. sp. Fig. 559 *P.subantarctica* n. sp. Figs. 560-562 *Poecilafroneta caudata* n. sp. Fig. 560 Carapace and abdomen Fig. 561 Palp. Fig. 562 embolus (from slide preparation)

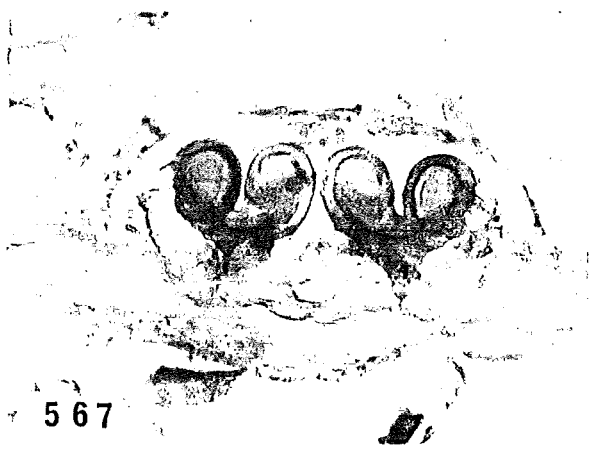
land. Nelson. South Terrace, Karamea, 20.i.50, R.R.F. 9 km S.E. of Ngahere, N.Z.S.F. Nelson-Westland scheme, litter 11.xi.71. Marlborough. South of Conway River, tussock, 28.vi.74, A.D.B. Westland. Hokitika, Hokitika River, grass 14.vii.74, A.D.B. Takutai, grass above beach, 14.vii.74, A.D.B. Ruatapu, *Spagnum*, 13.vii.74, A.D.B. Takutai, Spit, sedge tussock, 12.vii.74, A.D.B. Hokitika River, grass, 12.ix.74, A.D.B. Hokitika-Ruatapu, isolated *Sphagnum*, 13.vii.74, A.D.B. Moanatuatua Swamp, 22.vi.74, A.D.B. Canterbury. Arthurs Pass, Temple Basin, tussock, 12.xii.74, A.D.B. Arthurs Pass, Rough Creek, 2.viii.74, A.D.B. Arthurs Pass, Rough Creek, 2.viii.74, A.D.B. Arthurs Pass, Rough Creek, *Raoulia* 3.viii.74, A.D.B. Arthurs Pass, *Dracophyllum* litter, 5.vii.74, A.D.B. Arthurs Pass, dense shade, 8.vii.74, A.D.B. Deans Bush, Christchurch, flax litter, 12.vii.74, A.D.B. Otira, Rolleston River, under

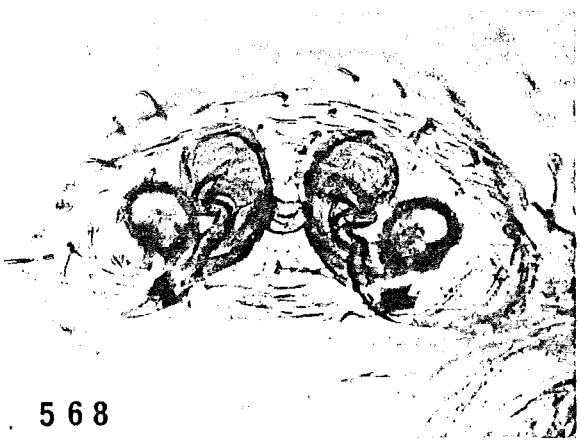












Vulvae Fig. 563 *Parafroneta monticola* n. sp. Fig. 564 *P.persimilis* n. sp. Fig. 565 *P.minuta* n. sp. Fig. 566 *P.insula* n. sp. Fig. 567 *P.subantarctica* n. sp. Fig. 568 *Poecilafroneta caudata* n. sp.

stones. A.D.B. Otago. Leith Saddle, Dunedin, grass and manuka, A.D.B. Fiordland. Milford Sound, 30.i.76, R.R.F.

All mainland records attributed to *P.marrineri* are of this species. The differences between the vulvae of *P.marrineri* and *P.confusa* are small, but those between the palps are easily recognised. The shorter suprategulum and embolus of *confusa* is characteristic, and when series of the two species covering a range of sizes are compared, it can be seen that the differences are not related to the effects of allometric growth. When the palps are viewed from the ventral aspect, the suprategulum of *marrineri* is always visible, whilst that of *confusa* is always concealed behind the conductor and embolus. *Confusa* is found commonly throughout the mainland, and the records given here represent only a portion of the material available.

Parafroneta monticola n. sp.

Fig. 563.

FEMALE

Measurements

Carapace	length 1.12	width 0.72	
Abdomen	length 1.80	width 1.28	

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	0.88	0.28	0.72	0.64	0.48	3.00
2	0.80	0.28	0.64	0.56	0.40	2.68
3	0.72	0.28	0.48	0.48	0.36	2.32
4	0.84	0.68	0.68	0.72	0.48	3.40

Colour Cephalothorax, chelicerae and legs, dusky brown. Abdomen uniformly dark grey, without pattern.

Legs Femora I with single prolateral spine. Femora 1-4 without dorsal spines. Tibiae 1-3 without apical spines, tibiae 4 with apical spines, all metatarsi spineless. Spines 1-2 short and weak. Tm I = 0.45.

Vulva Fig. 563. The atria are directed somewhat laterally.

Type Holotype female. Otago: Old Man Range, Clyde Rock, 22.ii.74, 5,400 ft. R. R. Forster (Otago Museum).

P.monticola is given standing as a distinct species because of its small size, lack of abdominal pattern, low Tm I value, and small differences from *P.confusa* in the shape of the bursae. It clearly belongs with *marrineri* and *confusa*, but a decision as to its true status requires more material.

Parafroneta minuta n. sp.

Figs. 551, 565

MALE

Measurements

Carapace	length 1.40	width 0.96	
Abdomen	length 1.40	width 1.00	

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	0.96	0.32	0.96	0.76	0.56	3.56
2	0.96	0.28	0.80	0.68	0.52	3.24
3	0.80	0.24	0.56	0.60	0.40	2.60
4	1.00	0.28	1.00	0.80	0.56	3.64

Colour Cephalothorax, chelicerae orange-brown, legs yellow brown with faint annulae. Abdomen grey with a broken dorsal folium with white spots.

Legs Femora I with single prolateral spine, 2-4 without spines. Tibiae 1,2 without apical spines, remaining spines weak. Tibiae 3,4 with apical spines. All metatarsi without spines. Tm I = 0.55.

Palp Fig. 551.

FEMALE

Measurements

Carapace	length 1.32	width 0.92	
Abdomen	length 1.60	width 1.04	

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	1.04	0.32	0.88	0.75	0.56	3.55
2	1.00	0.32	0.75	0.68	0.48	3.23
3	0.76	0.32	0.56	0.64	0.40	2.68
4	1.12	0.32	0.96	0.80	0.52	3.72

Colour As in male.

Legs As in male. Tm I = 0.56.

Vulva Fig. 565.

Types Holotype male, allotype female: Otago: Dunedin, Leith Saddle, grass and manuka litter at bush margin, 7.xii.74. A. D. Blest. Paratypes (Otago Museum).

Records Otago. Sullivans Dam, 7.v.66, R.R.F. Opoho Bush, 13.v.70, R.R.F. 11.i.71, C.L.W. Leith Saddle, 12.v.67, R.R.F. Fraser's Road, 7.v.66, C.L.W. Canterbury, Akaroa, 16.vi.66, C.L.W. Fiordland. Wilmot Pass, 23.i.70, I. J. Townsend.

It is possible that the Fiordland specimens, a single pair, will prove to be a distinct species when more material is available.

Parafroneta ambigua n. sp.

Fig. 558

MALE

Measurement

Carapace	length 1.40	width 1.00
Abdomen	length 1.32	width 0.80

Colour See *P.minuta*. Legs without annulae.

Palp Fig. 558.

Types Holotype male, paratype male: Taranaki, Silverhope, Hunterville, iii.51, R.J. Ramsay (Otago Museum).

Records Taranaki, Waituhi, near Taumaranui, 10.i.67. R.R.F.

Parafroneta persimilis n. sp.

Figs. 557, 564.

MALE

Measurements

Carapace	length 1.48	width 1.00
Abdomen	length 1.76	width 1.00

Colour *See P.minuta*. Legs without annulae.

Palp Fig. 557.

FEMALE

Measurements

Carapace	length 1.28	width 0.88
Abdomen	length 1.72	width 1.20

Colour As in male

Vulva Fig. 564.

Types Holotype male, allotype female: Canterbury, Banks Peninsula, Kaituna Valley, leaf-mould, 12.ix.54, R.R. Forster (Otago Museum).

Records Canterbury. Puhi-Puhi Valley, under stone in *Fuchsia* litter, 20.v.75, A.D.B. Marlborough, Ships Cove, 27-30.xi.72, J. McBurney.

Parafroneta insula n. sp.

Fig. 566.

FEMALE

Measurements

Carapace	length 1.60	width 1.16
Abdomen	length 2.20	width 1.36

Colour See *P.confusa*. Legs with strong annulae.

Vulva Fig. 566.

Types Holotype female: Stewart Island, Native Island, leaf-litter, 18.i.70, Cresswell (Otago Museum).

Records Stewart Island, Hidden Island, leaf-mould, 28.i.55, R. K. Dell & B.A. Holloway. Ulva Island, 18.xii.68, J. Sutherland.

Parafroneta subantarctica n. sp.

Figs. 559, 567.

MALE

Measurements

Carapace	length 1.04	width 0.68
Abdomen	length 1.16	width 0.68

Colour See *P.minuta*. Legs without annulae.

Palp Fig. 559.

FEMALE

Measurements

Carapace	length 1.00	width 0.68
Abdomen	length 1.08	width 0.52

Colour As in the male.

Vulva Fig. 567.

Types Holotype male: Antipodes Island, North Plain, *Coprosma* litter, 7.ii.69, G. Kuschel. Allotype female: Antipodes Island, Reef Point, 31.i.69, G. Kuschel. (Ent. Div. D.S.I.R.).

The vulva is not distinguishable from that of *P.insula*, for which the male is not known. The difference in size, the strong and distinctive colour pattern of *insula*, and their distributions, make it unlikely that they are conspecific, but a decision must await the discovery of the male of *insula*.

Poecilafroneta n. gen.

The only known species is a small, delicate spider. Carapace smooth with a few strong, forwardly directed hairs immediately behind the eyes; with sexual dimorphism. Subocular sulci extremely weak. (Fig. 569). Abdomen with strong pattern (Fig. 560), distinct from those of other Mynogleninae. All femora with dorsal spines, 1 femora with one or more prolateral spines. All tibiae with apical spines, and all metatarsi without them. Ventral, dorsal and lateral tibial spines present on all legs in both sexes. Tm 1 = 0.35 (only located on the male). Palp: much reduced. Suprategulum strongly sclerotised and produced into a blunt hook whose tip is anterior to the tip of the embolus. Embolus short, broad at the base and acuminate, provided with a weakly-sclerotised basal 'tail'. Duct not convoluted within it. Conductor weakly sclerotised; origin uncertain, but it does not appear to have a broad attachment to the tegulum, and probably arises from the duct-membrane alone. Tegular prominence indistinct, possibly represented by a slight rounded protuberance of the tegulum. Vulva: scape represented by a strong socket anterior to the posterior margin of the dorsal plate, (which presumably does not contribute to it), about level with the bursae; bursae simple.

Type species *Poecilafroneta caudata* n. sp.

P.caudata emphasises the problem of determining affinities for those species with simplified genitalia. Superficially, it resembles a *Parafroneta*, but the chaetotaxy allies it to *Novafroneta*, and the strong suprategulum and virtual absence of a tegular prominence support this conclusion. The medial position of the reduced vulval scape is reminiscent of *Metamynoglenes*, and doubtless corresponds to the separation of the tips of the embolus and suprategulum. The very strong and unusual colour pattern suggests that it lives above the litter layer in low vegetation. It seems advisable to place it in a separate genus.

Poecilafroneta caudata n. sp.

Figs. 560-562, 568, 569.

MALE

Measurements

Carapace	length 1.32	width 0.76
Abdomen	length 1.60	width 0.96

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	1.28	0.28	1.20	1.12	0.72	4.60
2	1.20	0.24	1.00	1.00	0.60	4.04
3	0.96	0.24	0.64	0.68	0.48	3.00
4	1.20	0.28	0.84	0.96	0.56	3.84

Colour Cephalothorax, chelicerae, brown, legs pale yellow with black annulae. Abdomen grey with numerous white spots, a triangular dark mark anteriorly, and two posterior lateral dark patches. The spider has a somewhat delicate elongated appearance. (Fig. 560).

Legs Femora 1 with two prolateral spines, and two dorsal (right) or one dorsal (left) spines. Femora 2,4 with one dorsal spine. Tibiae 1-4 with apical, dorsal, ventral and lateral spines. Metatarsi 1-4 without apical spines. Tm 1 = 0.35, close to a fine dorsal spine.

Palp Figs. 561, 562. The specimen is rather bleached and the basal structures of the organ are not distinct. The outer lateral aspect suggests a *Parafroneta*, but the ventral aspect shows the characteristic shape of the embolus and the form of the suprategulum.

FEMALE

Measurements

Carapace	length 1.12	width 0.80
Abdomen	length 1.48	width 0.80

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	1.08	0.28	0.80	0.80	0.52	3.48
2	1.00	0.28	0.72	0.76	0.52	3.28
3	0.76	0.24	0.52	0.56	0.44	2.52
4	0.96	0.28	0.76	0.72	0.52	3.24

Colour As in male.

Legs As in male, but 1 femora with one prolateral and one dorsal spine only. Tm 1 not located.

Vulva Fig. 568 (from paratype).

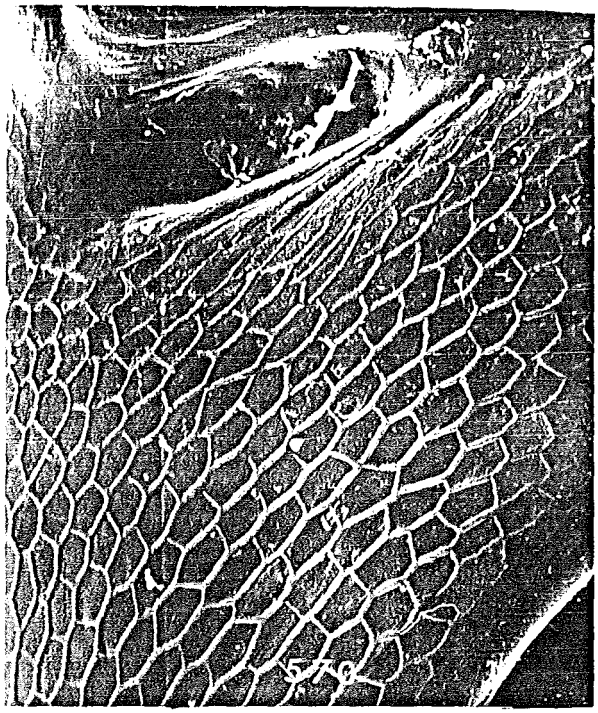



Fig. 569 *Poecilafroneta caudata* n. sp. Shallow sub-ocular sulcus. The large pits within the sulcus each contain either one or two secretory pores. Below the sulcus, a few secretory pits are scattered over the clypeal cuticle Fig. 570 *Metafroneta sinuosa* n. sp. to show the form of a sub-ocular sulcus, and the reticular sculpturing of the cuticle of the carapace. Scanning electron micrographs

Types Holotype male, allotype female: Nelson, Waitapu Bush, 27.v.67, R.W. Hutton (Otago Museum).

A single paratype female was sacrificed in order to verify the existence of the subocular sulci by scanning electron microscopy.

Metafroneta n. gen.

Medium-sized spiders. Carapace rugose (Fig. 570), male head very slightly raised behind eyes. Sub-ocular sulci well-developed (Fig. 571). Abdominal patterns strong. Femora 1 with a single prolateral spine, 2,3,4 femora without spines. Tibiae with apical spines, variously distributed, posterior metatarsi with apical spines. Tm 1 = 0.60-0.70. Male palp: paracymbium of complex form, with a well-defined distal arm; suprategulum a strong hook, conductor strongly sclerotised, attached to tegulum and base of embolus; embolus a flat, curved sclerite with the duct opening to the exterior at its tip. Vulva: scape absent, represented by an anterior socket; atria anterior, with their openings directed laterally. Bursae simple, narrow and tubular.

Type species *Metafroneta sinuosa* n. sp.

Metafroneta sinuosa n. sp.

Figs. 570-574, 577-578.

MALE

Measurements

Carapace	length 1.67		width 1.08
Abdomen	length 1.75		width 0.83

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	1.33	0.42	1.17	0.92	0.67	4.51
2	1.17	0.42	1.00	0.92	0.58	4.09
3	0.92	0.33	0.83	0.83	0.50	3.41
4	1.33	0.42	1.25	1.17	0.67	4.84

Colour Cephalothorax and chelicerae brown, carapace with darker lateral bands, fovea and striae. Legs yellow-brown, in some examples with faint annulae.

Carapace Slightly raised behind the eyes (Fig. 571).

Legs Femora 1 with single prolateral spines, 1 without dorsal spines. Tibiae 1 without apical or other spines, tibiae 2 without apical spines, but ventral and dorsal spines present, tibiae 3,4 with apical, dorsal and ventral spines. Metatarsi 3,4 only with apical spines. Tm 1 = 0.68.

Palp Figs. 572, 574.

FEMALE

Measurements

Carapace	length 1.75		width 1.08
Abdomen	length 2.67		width 1.67

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	1.25	0.50	1.08	1.00	0.75	4.58
2	1.17	0.33	0.92	0.92	0.67	4.01
3	1.00	0.33	0.83	0.83	0.58	3.57
4	1.33	0.50	1.17	1.08	0.75	4.83

Colour As in male, but annulae on legs very strongly marked.

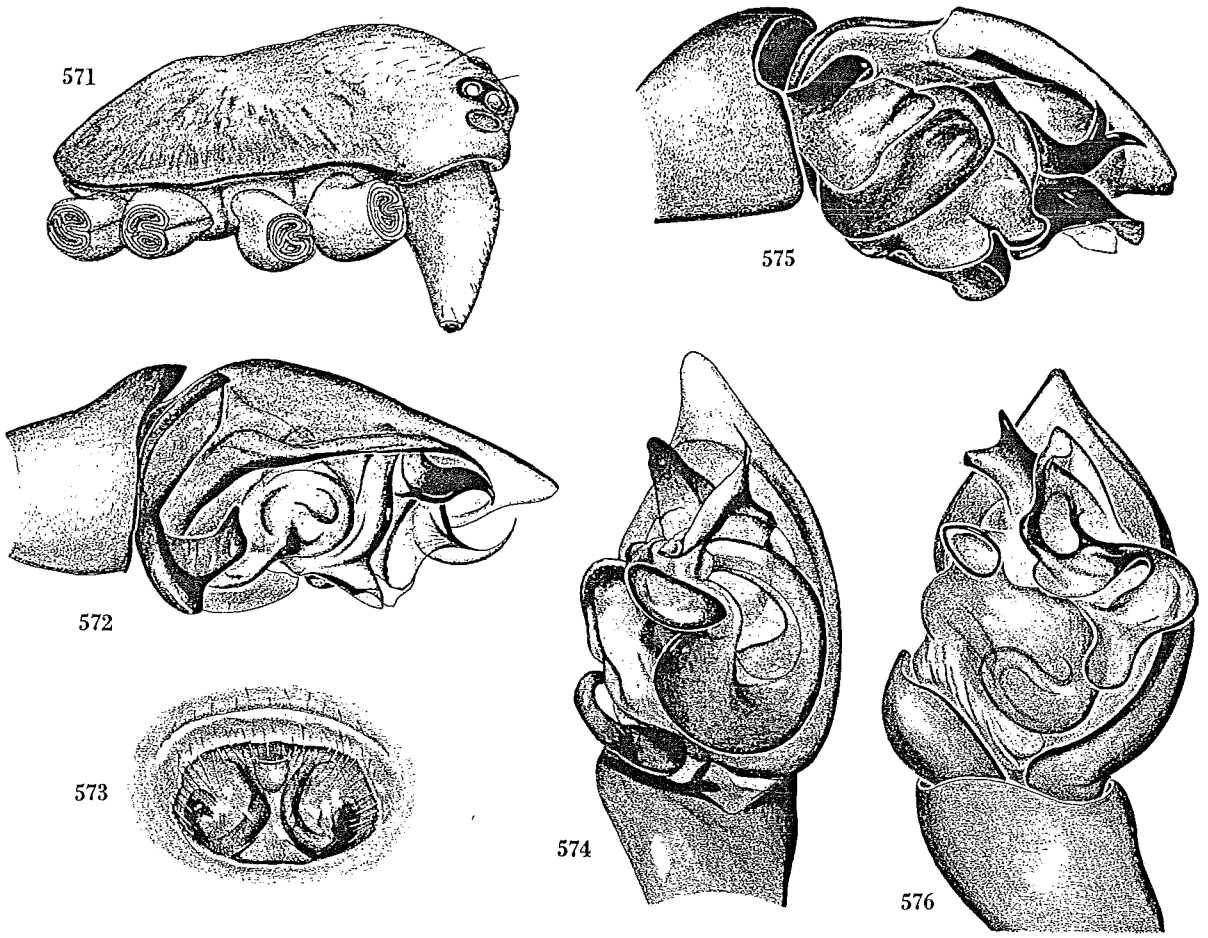
Carapace Not raised behind the eyes.

Legs Femora as in the male. Tibiae 1 without apical spines but dorsal and ventral spines present and strong. Tibiae 2-4 with apical spines. Metatarsi 3,4 only with apical spines.

Genitalia Fig. 573, 577, 578.

Types Holotype male, allotype female: Dunedin, Leith Saddle, at grass roots under manuka at edge of bush, 7.xii.74, A.D. Blest. Paratypes (Otago Museum).

Records Fiordland. Monkey Creek, at roots of wet grass and tussock, 15.ii.75, A.D.B. Lyttle's Flat.



Figs. 571-574 *Metafroneta sinuosa* n. sp. fig. 571 Carapace Figs. 572,574 right palp Fig. 573 epigyne Figs. 575-576 *Hyperafroneta obscura* n. sp. right palp

tussock, by creek, 17.ii.75, A.D.B. Otago. Trotter's Gorge, 27.vii.67, R.R.F. Tapanui, leafmould, 23.v.70, C.L.W. Fraser's Gully, creek-bed, 17.v.69, C.L.W. Dunedin, Flagstaff, pitfall trap, 10-17.i.71 C.L.W. Stewart Island. Horseshoe Bay, 2.xi.54. R. J. Scarlet.

Metafroneta minima n. sp.

Fig. 579

FEMALE

Measurements

Carapace length 1.36 width 1.00
Abdomen length 2.00 width 1.20

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	1.04	0.36	0.96	0.80	0.68	3.84
2	1.00	0.36	0.84	0.68	0.60	3.48
3	0.84	0.32	0.64	0.68	0.48	2.96
4	1.08	0.36	0.96	0.92	0.60	3.92

Colour As for *M.sinuosa.*

Legs As for the female *M.sinuosa.* Tm I = 0.63.

Vulva Fig. 579.

Type Female holotype: Fiordland, Te Anau Bush, in wet detritus in a ditch, 15.i.75, A. D. Blest (Otago Museum).

The wavy posterior margin of the vulva distinguishes this species from *M.sinuosa,* and was visible in the unprepared epigyne; it has not been seen in females from any sample of *sinuosa,* and, together with the smaller size of the present female justifies its provisional description as a valid species.

Hyperafroneta n. gen.

Small spiders. Carapace smooth, covered with sparse, short, forwardly-directed bristles, without sexual dimorphism. Abdomen with weak pattern. Female palp without claw. Femur with single small prolateral spine only, 2,3,4 spineless. All tibiae with one prolateral, one ventral and two dorsal spines in the female; tibiae 1,2 with weak dorsal spines only in the male. Tibia 4 with three apical spines in both sexes, apical spines absent from 1,2,3. Metatarsi 1,2,3 spineless, 4 with one prolateral and one apical spine. Tm I = 0.64 – 0.68. Paracymbium, small, broad. Suprategulum bifid, tegular prominence well-developed, knob-shaped; conductor short, broad, strongly-sclerotised, with narrow attachment to tegulum and base of radical component. Embolus complex, with a thin, translucent side-arm from which the sperm duct opens to the exterior, and a bifid, mesally-directed lobe basally; embolus connected to the radical component by a narrow neck. Vulva: similar to *Metafroneta.* Atria and a minute socket in the anterior region of the genital plate.

Only one female and three males of this monotypic genus have been collected. The pair taken at

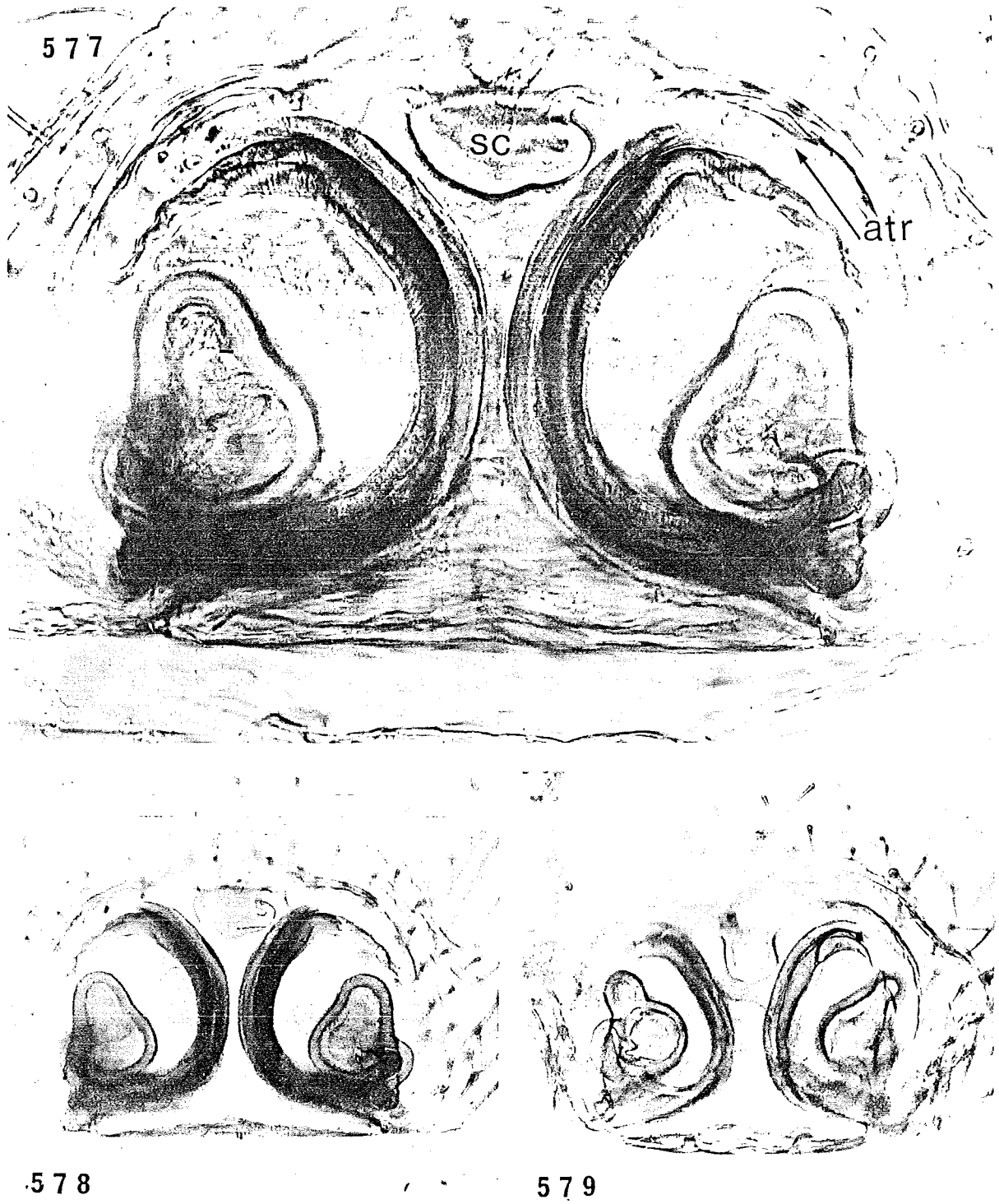


Fig. 577-578 *Metafroneta sinuosa* n. sp. Vulva. Fig. 579 *M.minima* n. sp. vulva. sc = socket representing a vestigial scape, atr = atrium.

Cascade Creek were from soil previously worked by ants, and the other males came from pit-fall traps. The species probably occupies interstitial habitats, and the slow, creeping locomotion shown by the two live specimens seen is consistent with such a niche-preference.

Hyperafroneta obscura n. sp.

Figs. 575-576, 580

MALE

Measurements

Carapace	length 1.20	width 0.84
Abdomen	length 1.00	width 0.76

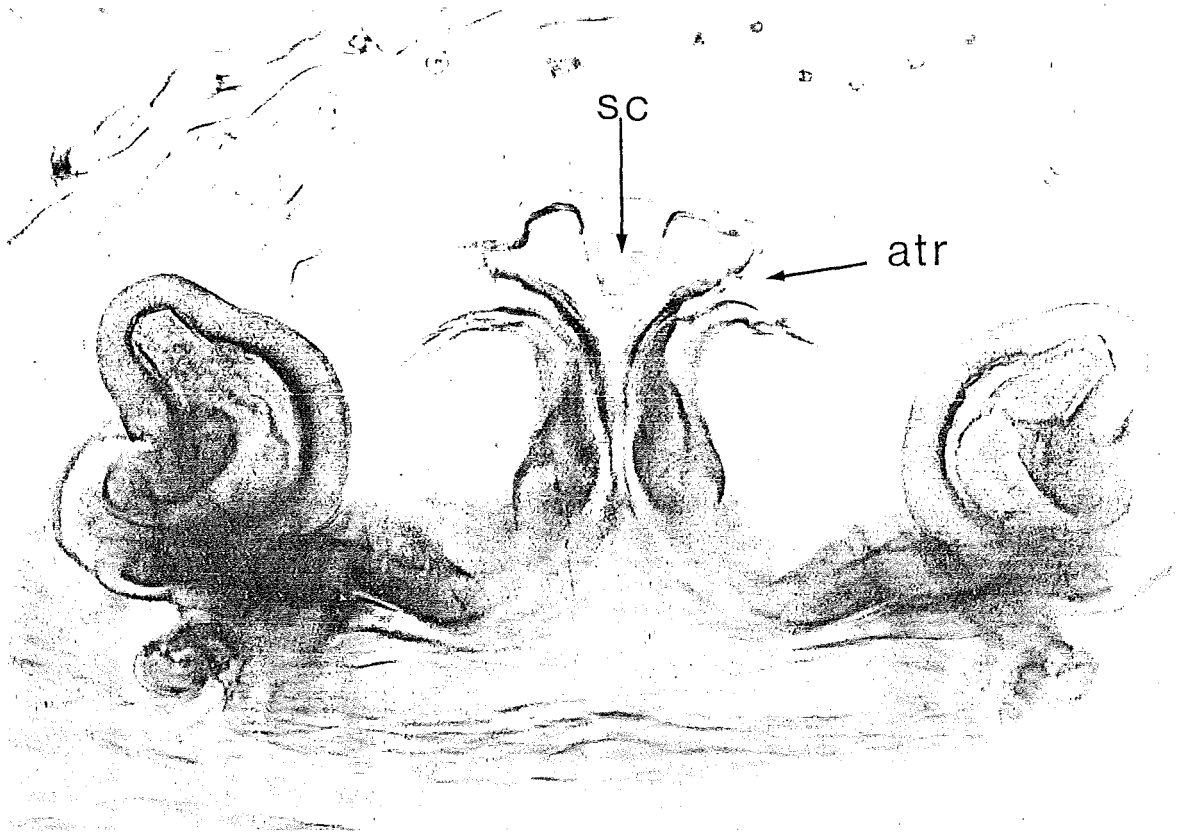


Fig. 580 *Hyperafroneta obscura* n. sp. Vulva. sc = socket representing a vestigial scape, atr = atrium.

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	0.93	0.33	0.80	0.63	0.55	3.24
2	0.90	0.30	0.70	0.55	0.50	2.95
3	0.80	0.25	0.43	0.53	0.40	2.41
4	0.93	0.28	0.75	0.75	0.55	3.26

Colour Cephalothorax and chelicerae, pale brownish-yellow. Abdomen grey with whitish spots dorsally, folium represented by four pairs of dusky bars. A blackish ventro-lateral line on each side. Legs yellow.

Legs See genus description for chaetotaxy. Tm I = 0.68.

Chelicerae Anterior row of 3 strong basal and 2 weak apical teeth. Posterior row of 4 minute granular teeth.

Palp Figs. 575, 576.

FEMALE

Measurements

Carapace	length 1.16	width 0.88
Abdomen	length 1.52	width 0.80

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	1.10	0.33	0.85	0.73	0.55	3.56
2	0.93	0.33	0.70	0.63	0.50	3.09
3	0.85	0.30	0.58	0.55	0.45	2.73
4	1.13	0.33	0.90	0.78	0.58	3.72

Colour As for male.

Carapace The head bears a median line of fine, forwardly-directed hairs, and two patches of similar hairs behind the lateral eyes which are absent or reduced in the males.

Legs See genus description for chaetotaxy. Tm I = 0.64.

Vulva Fig. 580.

Types Holotype male: Fiordland, Cascade Creek, soil under *Raoulia* mats at forest-creek interface, 16.i.75. Allotype female; same locality, a few yards from the first site, ant-worked soil under moss, 17.ii.75, A. D. Blest (Otago Museum).

Records Otago. Leith Saddle, pitfall trap, 22.iv.69, R.R.F. Dunedin, Flagstaff, pitfall trap, 11-28.iv.71, C.L.W.

Cassafroneta n. gen.

Head raised in the male, sub-ocular sulci large. Carapace smooth. Abdomen without pattern. Femora without spines. All tibiae with two dorsal spines only, apical tibial spines absent. Metatarsi and tarsi without spines. The tibial spines in the only known male specimen are all strongly developed. Tm I = 0.42. Palp: Cymbium small. Suprategulum well-developed into a slender hook. Conductor strongly-sclerotised, broadly-attached to tegulum and to the radical component. Embolus short, strongly-sclerotised, continuous with a broad radical component. Duct not convoluted in its passage through the embolic division.

Type species: *Cassafroneta forsteri* n. sp.

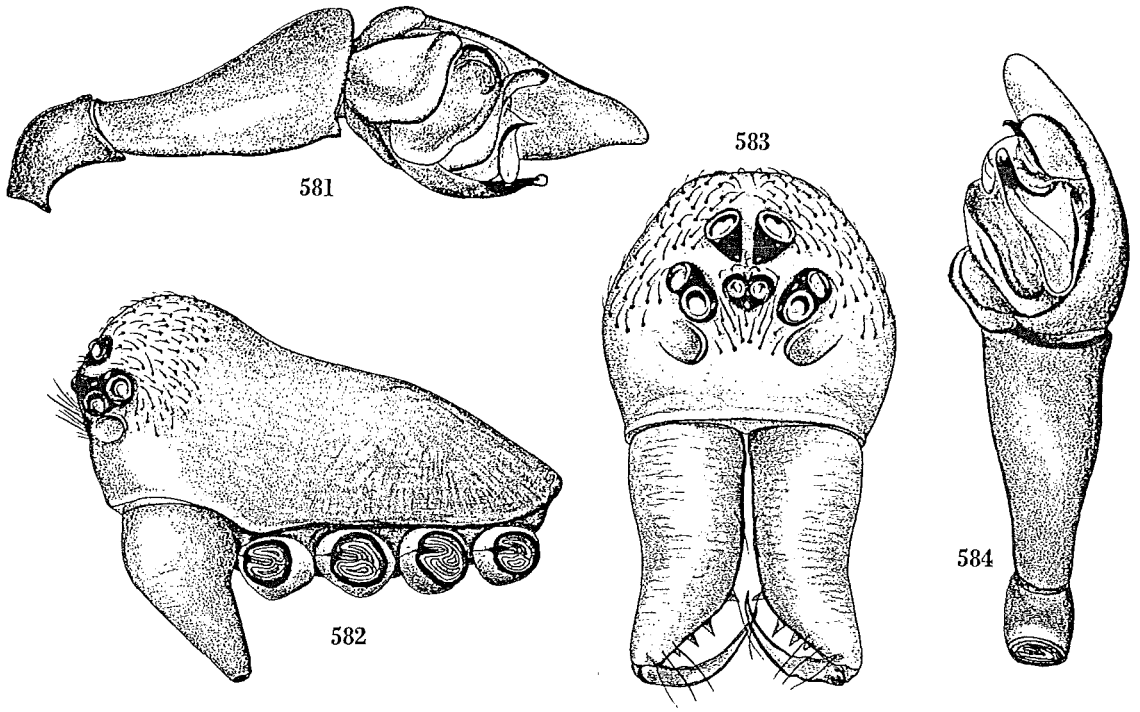
Cassafroneta forsteri n. sp.

Figs. 581-584.

MALE

Measurements

Carapace	length 1.12	width 0.80
Abdomen	length 1.16	width 0.64



Figs. 581-584 *Cassafroneta forsteri* n. sp. Figs. 582, 583 carapace Figs. 581, 584 palp

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	0.95	0.30	0.88	0.75	0.60	3.58
2	0.93	0.30	0.75	0.70	0.50	3.18
3	0.70			missing		
4	0.90	0.25	0.80	0.75	0.50	3.20

Colour Cephalothorax brown. Abdomen black with two small pale lateral spots at anterior end.

Carapace Somewhat raised behind eyes, clypeus high, subocular sulci large, more-or-less circular in outline and directed forwards. There is a patch of hairs between them and two lateral patches of short hairs behind the posterior eyes. Figs. 582, 583.

Chelicerae Anterior row of 4 small teeth. Posterior row of 2 – 3 minute, granular teeth. Chelicerae with a line of irregular granulations on anterior outer faces.

Legs See genus definition for chaetotaxy. Tm 1 = 0.42.

Palp Figs. 581,584.

Type Holotype male: Kaingaroa, Waimihia, from *Pinus radiata* branch litter, 9.xi.60, R.R. Forster (Otago Museum).

The unique specimen is in very poor condition, and fragile.

DISCUSSION

DISTRIBUTION WITHIN NEW ZEALAND

The spiders described here are derived from a large collection, amounting to some 5000 samples. Only a fraction of this material has been used to compile records; most of the samples are composed of females alone, largely in *Mynoglenes*. The time available has precluded preparation of their vulvae, and the identification of females in that genus is difficult and unreliable. For these reasons it is only possible to make a preliminary statement about their distributions. Nevertheless, it is clear that mainland distributions are of two types:

(i) Certain species are found throughout New Zealand. These are: *Mynoglenes diloris, M.mundenia, M.subdola, M.major,* and *Parafroneta confusa. Novafroneta vulgaris* extends over the whole of South Island and the greater, southern part of the North Island. These spiders occupy unstable or transitory habitats in marshes, wet supralittoral niches, and creekbeds subject to flash-flooding. *N.vulgaris* has the broadest range of habitat preferences, extending from the supralittoral zone to moss in beech-forest. *M.diloris, M.subdola* and *P.confusa* are also found in pasture, and quite commonly in grass-roots beneath manuka, but both these habitats are man-made and of recent origin.

(ii) The greater proportion of the species have local distributions most of which correspond to the division of New Zealand into faunal regions determined by its past geological history, which are similar to the distributions of other relict groups of New Zealand spiders (cf. Volumes 2, 3 and 4) and which have been described for other invertebrate groups (Forster, 1954; Lee, 1959; Craig, 1969). Some, at least, are clearly associated with native forest habitats and are not found outside them: these are the species in *Promynoglenes* and *Metamynoglenes* and some at least in *Pseudafroneta* and *Parafroneta.* Further collections aimed more specifically at the Linyphiidae may be expected considerably to increase the total species, for in this group the number known only from a few individuals is rather large.

Each of the subantarctic island groups contains its

complement of Mynogleninae, and with the exception of *P.marrineri*, which has been taken in all islands with the exception of the Snares, and *M.redacta*, which occurs on both the Snares and the Auckland Islands, species are restricted to single island groups. Both *marrineri* and *redacta* are species with reduced and simplified genitalia and variable chaetotaxy, and it is possible that in each case more than one species is concerned which cannot be distinguished morphologically from the present samples.

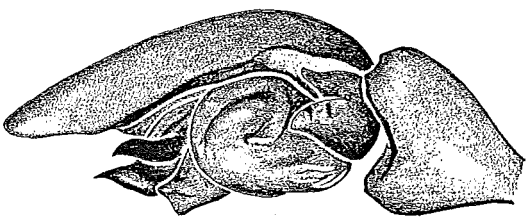
These restricted distributions both within the mainland and beyond it imply either that habitat preferences are very highly tuned, or that dispersal mechanisms are inefficient. Linyphiidae typically use 'ballooning' for dispersal (Bristowe, 1942). It is noteworthy that no Mynogleninae have been seen ballooning, even in conditions which provoke aerial dispersal *en masse* of the two common introduced linyphiids *Diplocephalus cristatus* and *Leptyphantes tenuis*, and the latter alternative seems the most likely explanation, although it leaves the matter of how members of the first group (i) arrive at their temporary habitats unresolved.

WORLD DISTRIBUTION

The only unequivocal Mynogleninae other than from New Zealand are the species of *Afroneta* and *Trachyneta* described by Holm (1968) from Central Africa. Figs. 585,586 show some of the relevant features of *Afroneta brevidentata* Holm. The palpal organ is similar to those of *Pseudafroneta*, in that the conductor is fused to the embolus. The vulva, however, is much closer to those of *Parafroneta*, and the tibial and metatarsal spines are more numerous than in any mainland New Zealand species. The subocular sulci are shallow but contain a full complement of secretory pores arranged in clusters, and the sulci of specimens preserved in alcohol were occupied by plugs of coagulated material, just as in the New Zealand forms.

No member of the Mynogleninae as defined here by the possession of subocular sulci has been found in Australia or Tasmania. However, it will be argued below that the Mynogleninae is a relict group which preserves ancestral Linyphiid characters, and that forms like them gave rise to both the Erigoninae and the Linyphiidae. The latter derivation supposes that subocular sulci were lost, and it is reasonable to look closely at possible bridging forms which do not possess them. Two possible candidates have been described by Wunderlich (1976), as *Mynoglenes simplicipalpis* Wunderlich and *Australolinyphia remota* Wunderlich.

Mynoglenes simplicipalpis was described from two males and a subadult female taken in the Kuring-gai National Park, Sydney, New South Wales. I have found it in the type locality at Berowra, in



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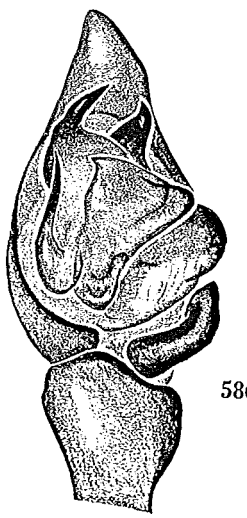

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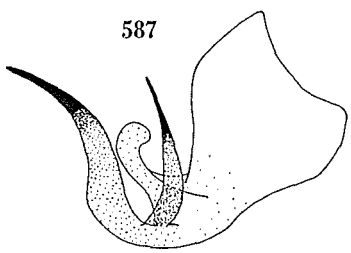

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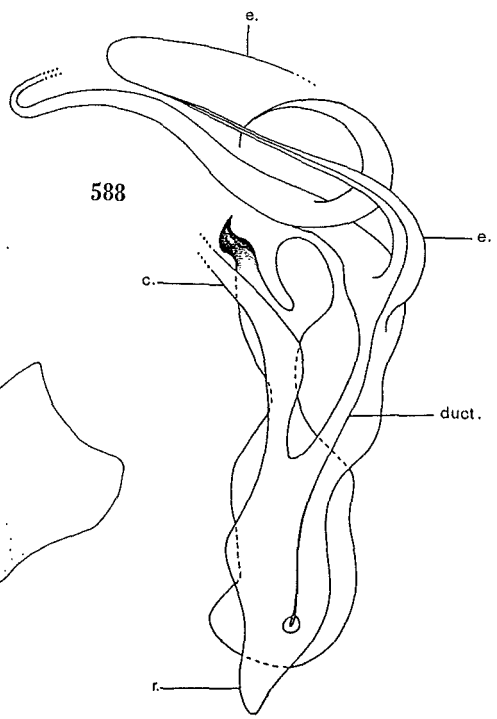


Figs. 585, 586 *Afroneta brevidentata* Holm palp Fig. 587 *'Mynoglenes' simplicipalpis* Wunderlich paracymbium of left palp Fig. 588 *Australolinyphia remota* Wunderlich, components of the palpal organ. The long distal process of the embolic division, and the distal part of the conductor are not shown in their entirety. e = embolus; c = conductor; duct = sperm-duct; r = radical component

October 1972 and in January-February 1976; it is a common species, spinning a sheet web well above the ground in dense low vegetation, usually towards the bottom of ravines where the humidity is high. Salient features are shown in Figs. 587, 589 and 590. It is not acceptable as a mynoglenine for the following reasons:

(i) There are no subocular sulci, and the clypeus is relatively low, so that there is no space which they might have occupied (Fig. 589). There are no secretory pores in the small space beneath the lateral eyes.

(ii) Wunderlich described a 'grube' or pit in the following terms: 'Lateral-aboral der hinteren Seitenaugen befindet sich jederseits 1 winzige Grube . . .'. This structure is figured as being near to the carapace margin about level with the maxillae, and well posterior to the eyes. It could be argued that it is a displaced subocular sulcus, but, unfortunately, it does not exist. Under the light microscope it appears as a shallow and just perceptible indentation of the cuticle; scanning electron microscopy shows it to be no more than that. There is no pit, the cuticular sculpturing is not interrupted by it, and it contains no secretory pores (Figs. 589,590).

(iii) The paracymbium is a complex structure, quite unlike the simple forms found in Mynogleninae: in addition to the two spiniform distal processes noted by Wunderlich, there is a second translucent, rounded process arising at the base of the proximal spiny process and lying mesially with respect to it. It is not visible in the intact palp, and can only be seen clearly when the paracymbium is dissected away from it and examined separately. (Fig. 587).

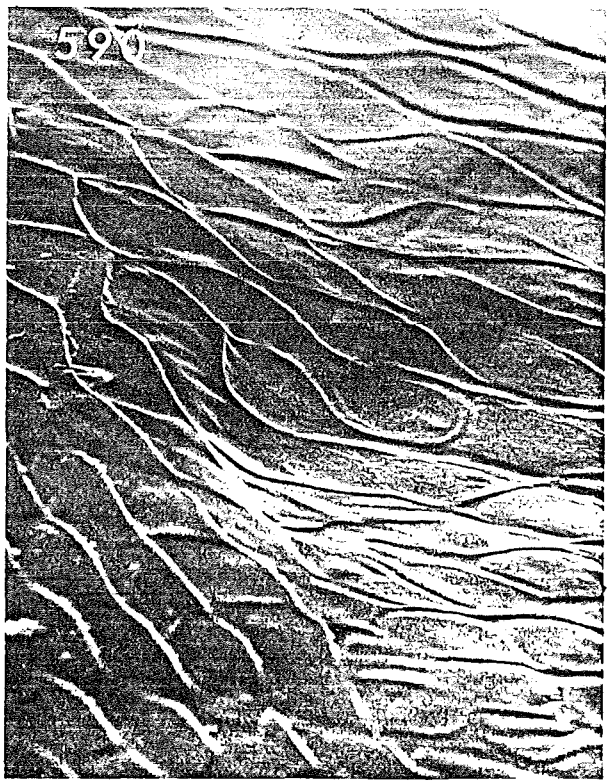
(iv) The palpal organ shows some similarity to those of *Parafroneta*, but no more so than is found in the erigonine *Leptorhoptrum*, for example.

Most strikingly, however, there is no suprategulum.

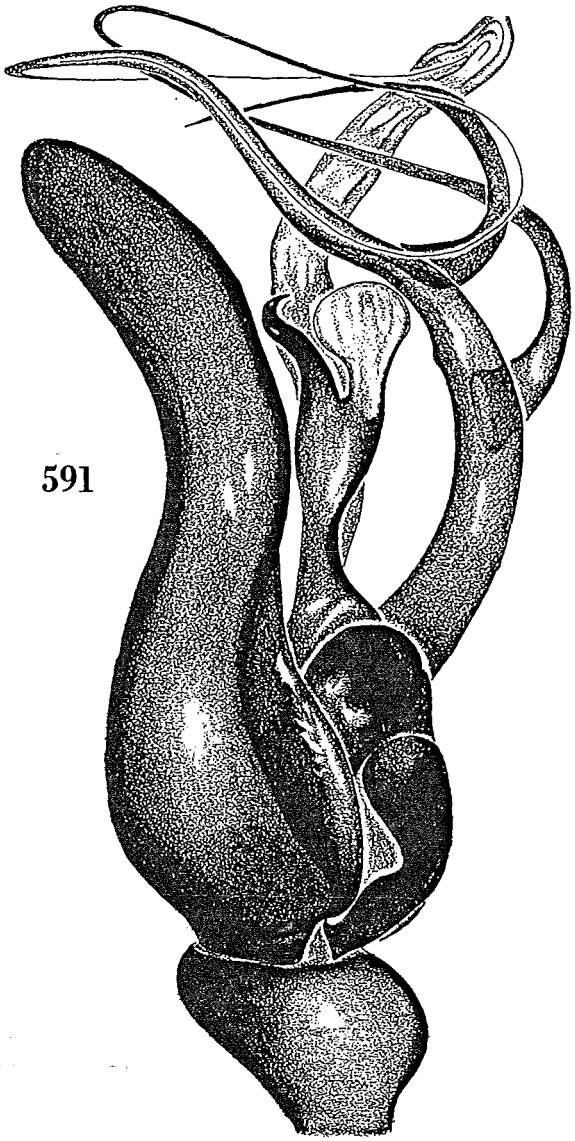
(v) The vulva is extremely simple, and in correspondence with the absence of the suprategulum in the palp, there is no socket or scape-like structure on the epigyne. The disposition of the bursae and accessory glands is different from any of the mynogleninae forms so far seen.

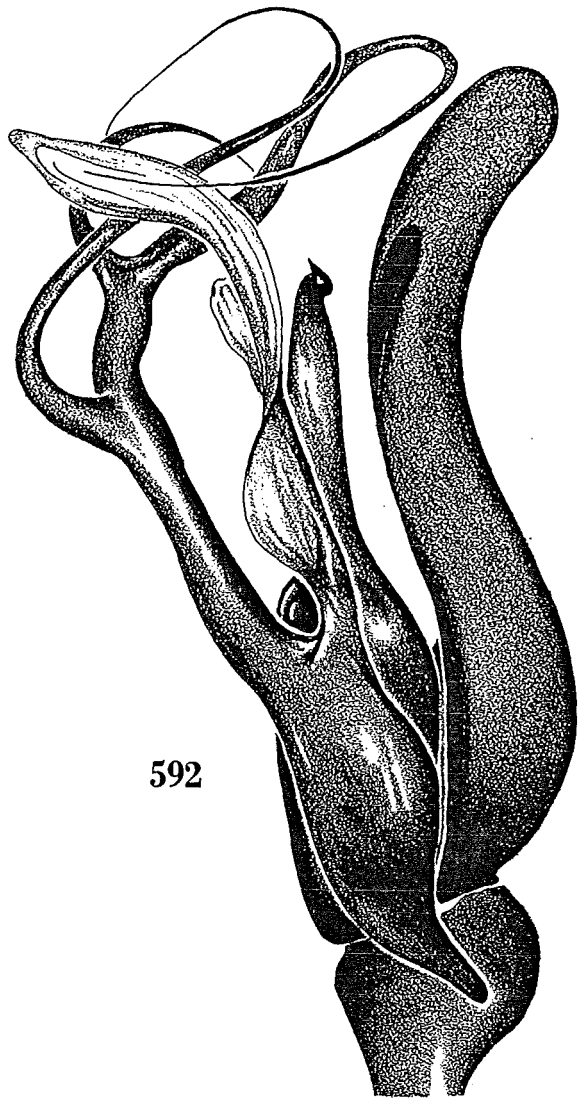
(vi) The lateral faces of the chelicerae are equipped with tubercles bearing coarse bristles, and with stridulatory files. The bristles are the only character which suggestes mynoglenine affinities, but I have noted that it is present in other Australian Linyphiidae in which there is no reason to suspect them.

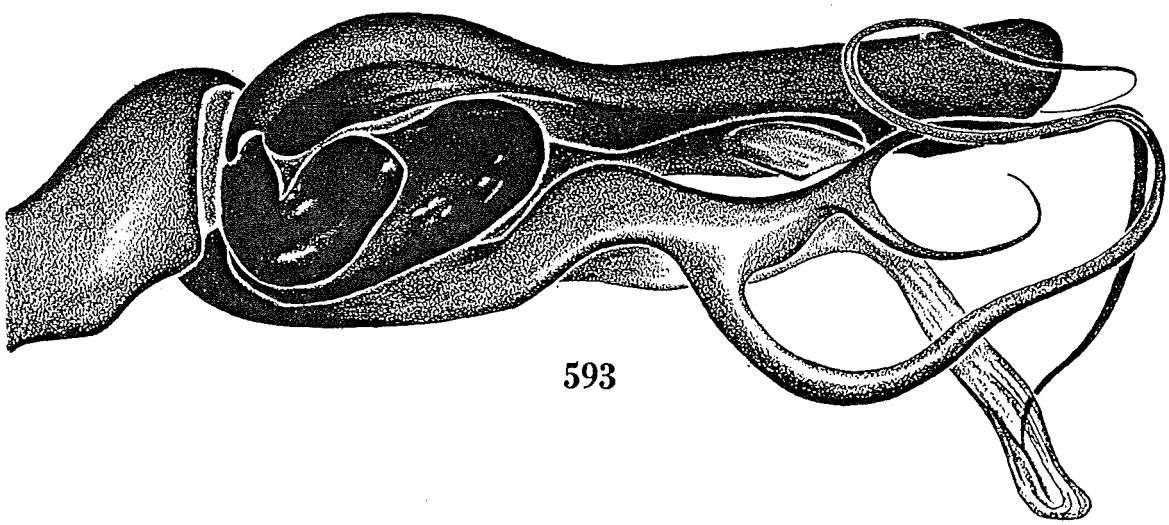
Mynoglenes simplicipalpis clearly requires a new genus to be erected for its reception, but this should



Figs. 589-590 *'Mynoglenes' simplicipalpis* Wunderlich Fig. 589 right anterior region of head and carapace, viewed obliquely, to show the *'grube'* described by Wunderlich (1976) Fig. 590 the *'grube'* enlarged to show that it is a shallow cuticular indentation without secretory pores. Scanning electron micrographs







Figs. 591-593 *Australolinyphia remota* Wunderlich palp Fig. 591 dorsal aspect viewed obliquely to show the suprategulum and accessory superategular process, possibly derived from a tegular prominence of the mynoglenine type Fig. 592 inner lateral aspect, to show the tail of the radical component (= the *lamella characteristica* of Wunderlich (1976)). A key to the components is given in Fig. 588

be done in the context of a full examination of the Australian linyphiid fauna, and will not be attempted here.

A more plausible candidate for inclusion in the Mynogleninae is *Australolinyphia remota* Wunderlich, described from a single male and three females taken in the Lamington National Park, Brisbane. I have taken this remarkable spider near Blackheath in the Blue Mountains, and in the Ku-ring-gai National Park at Berowra, New South Wales, in February 1976. It occupies habitats very similar to those adopted by *Mynoglenes titan* and *M.major* in New Zealand, living at the margins of streams and spinning its web over flowing water. Wunderlich allies it to *Linyphia:* 'Taxonomische Beziehungen bestehen nach der Lamella der ♂ – Palpus und der Vulva zur Gattung *Linyphia* LATREILLE 1804, insebesondere zur *pusilla*-Gruppe (=Subgenus *Microlinyphia* GERHARDT 1928).' Van Helsdingen (1970) recognises *Microlinyphia* as a valid genus.

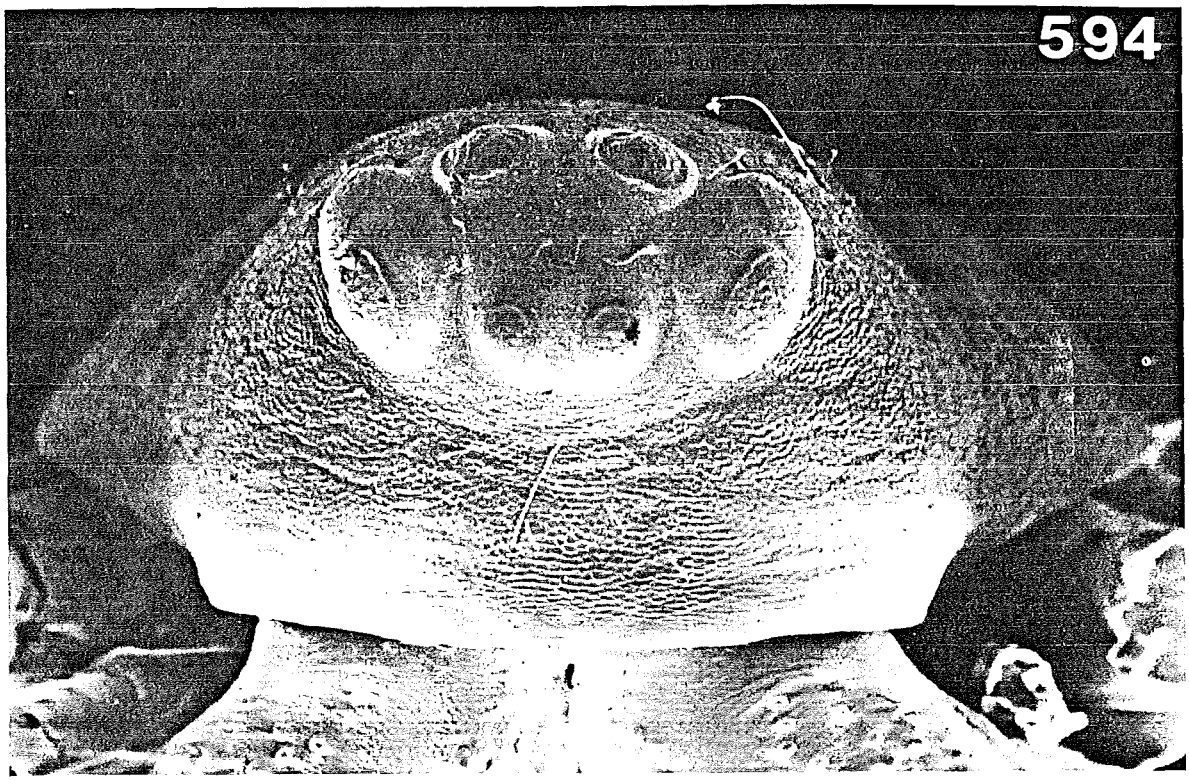
The position of *Australolinyphia* depends upon how the extremely unusual palpal organ is to be interpreted. It is illustrated in Figs. 588, 591-593. The cymbium and all components of the palpal organ are highly elongated. The tegulum and subtegulum are small, and the suprategulum, which carries an accessory membranous process is also elongated and ends in a small, strongly-sclerotised hook. The conductor is long, slender, membranous and slightly-twisted; it arises near to the base of the embolus. The embolic division is much-modified, and the major problem is whether it can be regarded as derived from the basic linyphiid pattern (Merrett, 1963; Van Helsdingen, 1969), or whether it continues the trend towards elaboration of the mynoglenine pattern shown by *Hyperafroneta, Afroneta,* and *Pseudafroneta.*

Wunderlich (1976) interprets the basal region of the embolic division as a *lamella characteristica.* Since the conductor lies some distance distally from it, this would seem to mean that it must, in turn, be regarded as representing a terminal apophysis. Dissection of the palp reveals that the 'lamella' is not a discrete sclerite; it could be regarded as homologous with the similar region at the base of the embolus in *Pseudafroneta* which is interpreted here as a vestigial radical component. In these terms, the conductor can be supposed to have been derived from a duct membrane, now much displaced distally. The processes which arise beyond the embolus proper can then be supposed to be derived from the embolus itself by the same kind of elaboration seen in the embolus of *Hyperafroneta.* A peculiar feature of this palp is that the very long and fine embolic process containing the duct lies freely in life beyond the margin of the cymbium, while the longer of the two more distal arms has its tip shielded by the tip of the conductor. The epigyne has large atria which lead to helical bursae not unlike those of *Promynoglenes* and a very long, cylindrical delicate scape which resembles that of the European *Diplostylus concolor* (Bl.). Nothing seen in the genital anatomy suggests how the delicate, long, and apparently unsupported embolus can be inserted successfully into the vulva.

Australolinyphia does not possess sub-ocular sulci in either sex, and the shape of the head is rather different from those of New Zealand and African Mynogleninae (Fig. 594). Also, the posterior row of cheliceral teeth is strongly-developed. Scanning electron microscopy shows that just below each pair of lateral eyes there is a small cluster of pores which might represent the vestiges of a sulcus, and which are not found elsewhere on the clypeal cuticle, (Fig. 595). Although this is suggestive, it can hardly be regarded as critical evidence for a close relationship with the Mynogleninae, and unless bridging froms are discovered in Australia the whole matter should be left *sub judice.* To date, then, no convincing Mynogleninae have been discovered in Australia; they may, perhaps, prove to occur in the few patches of *Nothofagus* forest which persist at high altitudes in Eastern Australia.

Dr. R. R. Forster has examined spiders sampled from litter in Chilean forests in the collections of the M.C.Z., Harvard University and has failed to find Mynogleninae. Little work has been done on the Linyphiidae of S.E. Asia. I have searched specifically for members of the family in transitory and second-growth habitats in Singapore and at Batu, near Kuala Lumpur, and in undisturbed forest at Fraser's Hill at 4000' in Western Malaysia. Undisturbed forest yielded few Linyphiidae; transitory habitats were occupied by a number of forms still to be described, some showing remarkable affinities with species described from central Africa, (Locket, in prep.), but there were no Mynogleninae. Thus the sub-family is apparently confined to the central African highlands, New Zealand, and the sub-antarctic islands. The close similarity between the African and New Zealand forms, despite the length of time that has passed since the continental masses separated implies that evolutionary rates within the group are slow, and this conclusion is supported by the small differences between species within genera and the overall homogeneity of the sub-family.

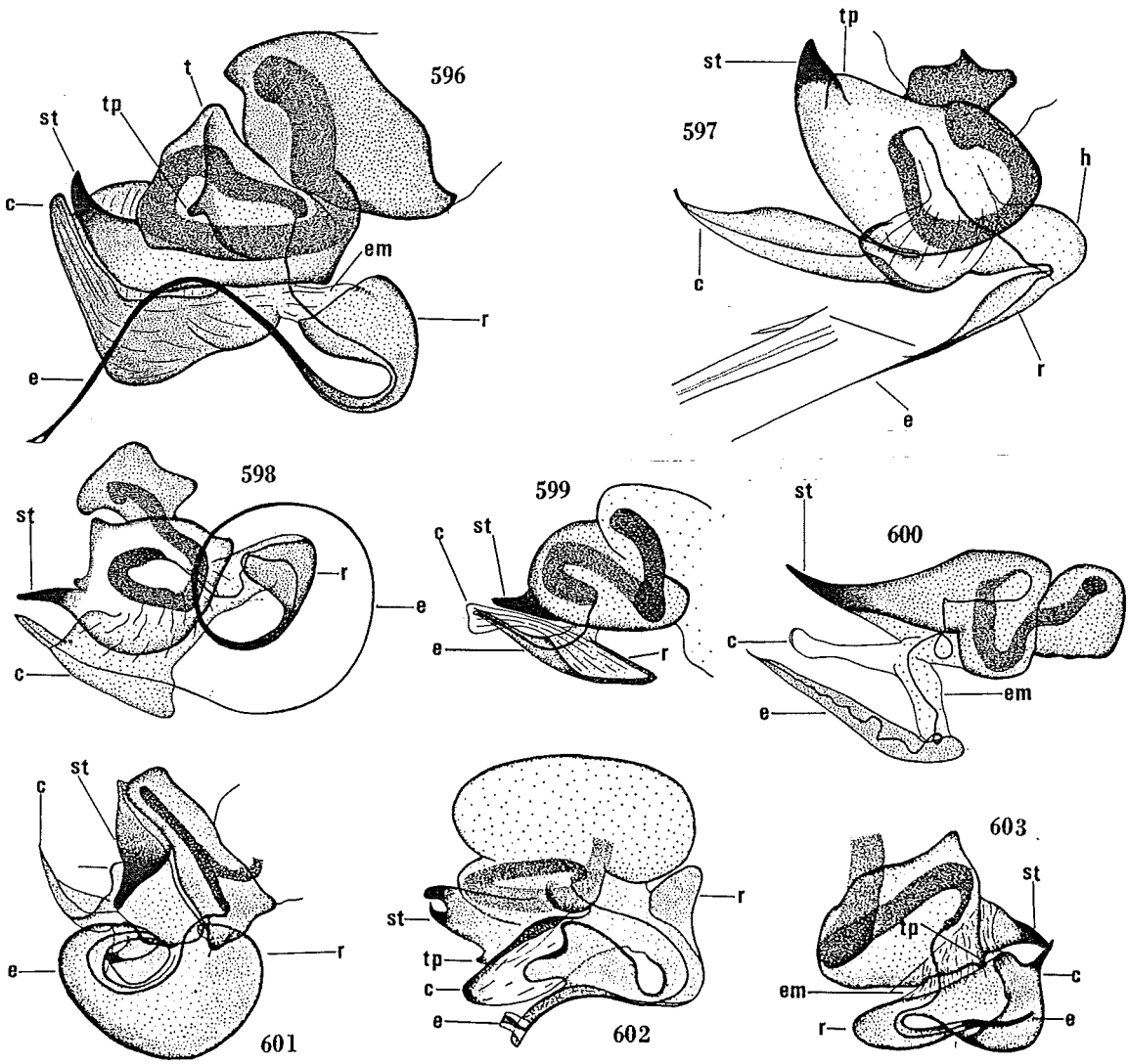
Despite their basically simple sexual organs, the Mynogleninae achieve considerable genital diversity. Diagrams of expanded palps covering the basic variants are given in Figs. 596-603. At one extreme, we find species with well-defined posterior epigynal scapes, or with posterior epigynal sockets which are clearly derived from them. Thus, within *Mynoglenes* as defined here, there are species with relatively large scapes, such as *M.diloris, M.major* and *M.titan,* and all stages of reduction to the condition found in *M.tegulata* and *M.banksi* where the scape is small and weakly sclerotised. During copulation, the suprategulum of the male palp engages the apical notch of the scape, acting as a pivot for subsequent movements of the palp during intromission (Blest and Pomeroy, 1978); broadly speaking, the sizes of the suprategula and scapes within the genus are correlated, as this functional relationship would suggest. Similarly, the conductors fit into the atria, and their sizes, too, are correlated. In *M.diloris,*



Figs. 594-595 *Australolinyphia remota* Wunderlich Fig. 594 male head Fig. 595 a small region of sub-ocular cuticle, to show the presence of secretory pores. Scanning electron micrographs

M.major and *M.titan* the wall of the atrium compresses the conductor as it is inserted, into a funnel through whose channel the long, filiform embolus is driven deep into the bursa. The lengths of the emboli can be seen to correspond to the lengths and numbers of turns of the bursae, and it would seem that the emboli are inserted until their tips reach the receptacula. Thus the three major pairs of characters in the genitalia (suprategulum-scape; conductor-atrium; embolus-bursa) are to a large extent functionally separate, and both can and do very independently within the genus. The tegular prominence, however, is used to provide lateral support to the base of the conductor, and it is usually large when the conductor is strongly developed and small when it is weak.

Essentially, the genitalia of *Promynoglenes* and *Metamynoglenes* follow the same plan, and probably operate in much the same way. Both genera have exposed embolic loops at the bases of their palps, similar to those of *Mynoglenes.* In the latter genus, after the palpal organ has been locked to the vulva, the expansion of haematodochal membrane causes it to press against the exposed loop of the embolus to provide the force to drive it through the conductor. Although the same mechanics of intromission may be supposed to prevail in *Promynoglenes* and *Metamynoglenes,* it is not easy to imagine how the large, horizontal, doubly-coiled embolus of *P.nobilis* is inserted. My attempts to persuade this species to mate in captivity have not been successful. The medial position of the scape in *Metamynoglenes* probably reflects the rather different relationship between the tips of the suprategula and the conductors in this genus; it is phylogenetically important because it provides a bridge between scapes in



t = tegulum st = suprategulum tp = tegular prominence c = conductor em = duct membrane e = embolus r = radical component h = 'hinge' (in *Pseudafroneta;* see text)

Figs 596-603 The basic variations of palpal anatomy within the Mynogleninae presented as diagrams drawn from whole mounts of expanded palps Fig. 596 *Mynoglenes major* n. sp. Fig. 597 *Pseudafroneta incerta* (Bryant). Fig. 598 *Promynoglenes silvestris* n. sp. Fig. 599 *Parafroneta confusa* n. sp. Fig. 600 *Novafroneta vulgaris* n. sp. Fig. 601 *Metafroneta sinuosa* n. sp. The suprategulum was displaced in the course of preparation Fig. 602 *Hyperafroneta obscura.* Fig. 603 *Afroneta brevidentata* Holm

the posterior position and the anterior sockets found in *Metafroneta* and *Hyperafroneta.*

Emboli which possess exposed basal loops and which are driven through their conductors require flexible hinges joining their radical components to the duct membranes or to the bases of the conductors, because the two components must be free to move in relation to each other. In the remaining genera there are no exposed loops, the emboli are not filiform, and the flexible hinges appear to be lost. In *Pseudafroneta,* the base of the conductor and the radical component of the embolus is fused. When the palps are expanded in caustic potash the consequent movement of the embolus with respect to the conductor (Fig. 597) might suggest that there is in fact a stiff hinge, but it is doubtful whether this is a natural movement. The extremely broad bursae in this genus appear to be designed to accommodate both conductor and embolus, whose apposed tips when inserted probably reach the receptacula. It is interesting that in *Mynoglenes banksi* the exposed loop is very small and the conductor and embolus are virtually of equal length. The conductor is probably inserted at least part way into the bursa, and this species is, in some ways, transitional to *Pseudafroneta.*

Afroneta, Parafroneta, Protoerigone and *Novafroneta* have palpal organs in which the embolic divisions are to various degrees reduced. Little can be said about them other than that the conductors clearly must play a diminishing role in intromission, for the emboli, which are quite short, inflexible sclerites, cannot be driven through them.

The genitalia of *Metafroneta* and *Hyperafroneta* are so far removed from those of the bulk of the genera that it is impossible to speculate usefully as to how they function. Their most remarkable feature is the migration of both the socket representing a vestigial scape and the atria to the anterior region of the epigynes. Forward migration of the scape is seen in *Metamynoglenes* and *Poecilafroneta,* but the change in the position of the atria, which must have profound mechanical consequences does not show a correspondingly gradual transition.

The assumption has been made that the condition of the genitalia in *Mynoglenes* represents the primitive arrangement, and that the overall trend in the subfamily is towards simplification and reduction. Although it is difficult to provide critical evidence for this view, it seems the most plausible evolutionary sequence; it is, perhaps, relevant that chaetotaxy appears to be least stable, and leg spines most numerous in *Mynoglenes,* especially in the *mundenia-horningi-inexacta* complex, and that it becomes most stable in those forms with reduced palpal organs, except in the case of *Parafroneta marrineri.* Furthermore, in *Mynoglenes, Promynoglenes* and *Metamynoglenes* the scape is a free prolongation of the posterior epigynal cuticle and is not connected to the dorsal plate; this condition must be primitive with respect to the remaining genera, in which the posterior margins of the epigynal cuticle and the dorsal plate are fused. *Protoerigone* presents an intermediate state in which the dorsal plate is folded round the tip of the scape, fitting against it tightly, and giving the appearance of a double margin to the scapes, although dissection and manipulation show that they are not fused. Modifications of the male head, where they occur, are also found in species with simplified palps. It may be suggested that stable chaetotaxy is a character associated with the more advanced forms.

The homogeneity of the Mynogleninae in all characters other than the genitalia is of particular interest because of its implications for discussion of the evolution of arthropod genitalia in general. Arthropod genitalia are no longer believed to function as isolating mechanisms on a simple lock-and-key basis; there is little to suggest that the genitalia of closely related species are, in fact, mechanically incompatible, and copulation is preceded by chains of events which constitute far more powerful and effective behavioural and chemosensory isolating strategies. It has been suggested that genital diversity reflects the outcome of selection operating on pleiotropic genes which are primarily concerned with other characters. It is difficult to sustain this view in the case of the Mynogleninae: they all look very much alike, and even genera differ only trivially from each other apart from their genital anatomy. Nor do they show the narrow niche preferences which could suggest a wealth of physiological adaptations whose genetic basis might, pleiotropically, underlie their genital diversification. A satisfactory theoretical framework for the discussion of genital evolution has yet to be achieved.

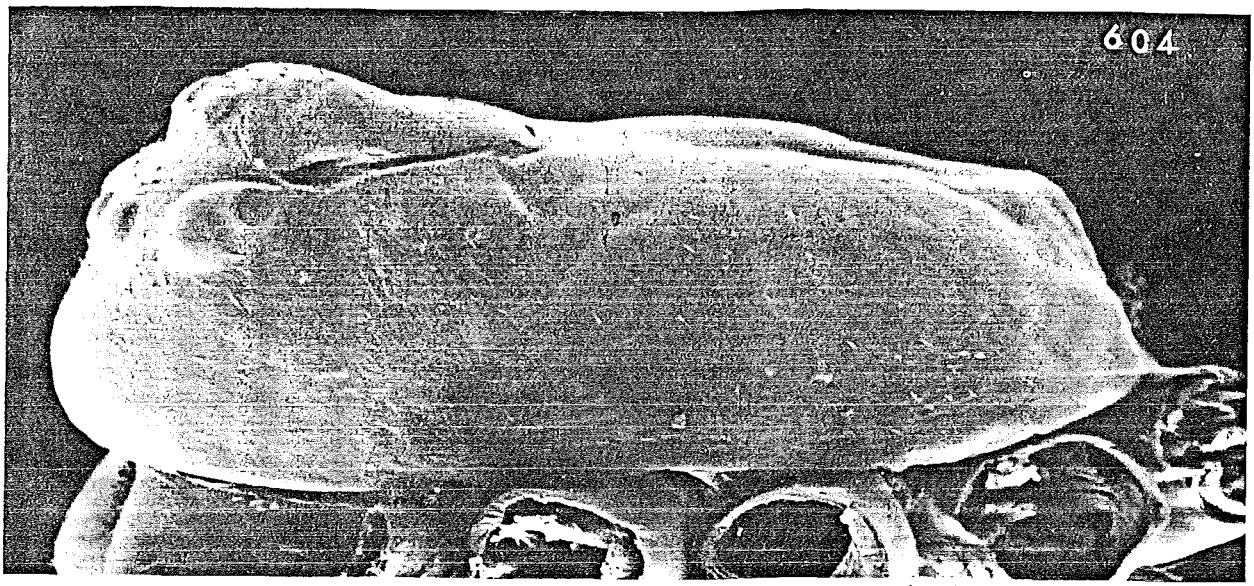
THE CLYPEAL GLANDS AND THE EVOLUTION OF CEPHALIC SPECIALISATIONS.

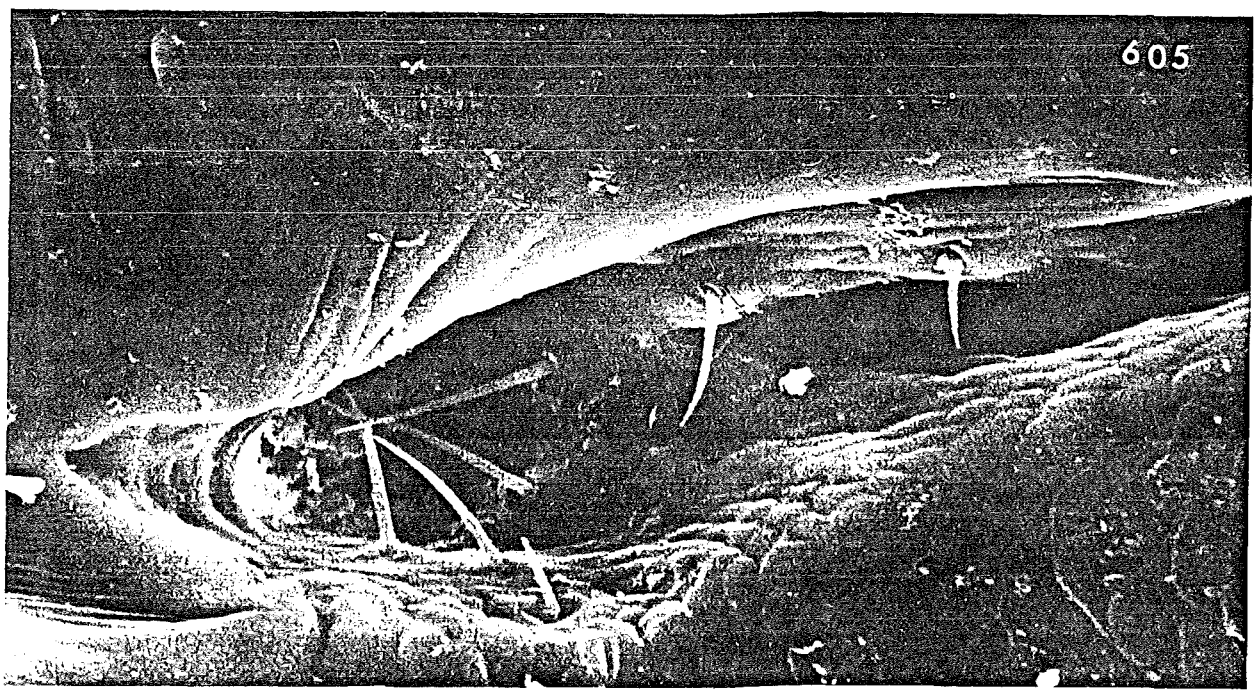
The subocular sulci of Mynogleninae are, at the least, parallel developments to the post-ocular sulci of Erigoninae, and it has been suggested that they may even have given rise to them (Blest and Taylor, 1977; Blest and Pomeroy, 1978). Their interpretation is clearly critical to any attempt to propose a phylogenetic scheme which will make sense of the relationships between the three subfamilies. The most economical, and, at the same time, the boldest hypothesis would suggest that sulci of the mynoglenine type gave rise directly to the kind found in Erigoninae, and a brief account must therefore be given of the latter.

A fairly typical erigonine carapace is shown in Figs. 604 and 605. The head is only slightly elevated. Behind the posterior lateral eyes there is a deep pit, whose orifice is continuous with a more shallow, posterior trough. The orifice leads to a deeply invaginated sac, and this is equipped with innervated, outwardly-directed spines, and pores supplied by the ductules of secretory cells. In all Erigoninae with post-ocular sulci whose mating behaviour is known, the head of the male is gripped by the chelicerae of the female, whose fangs are inserted into the pits (Bristowe, 1942; Blest and Taylor, 1977; Schlegelmilch, in preparation). In the Erigoninae, post-

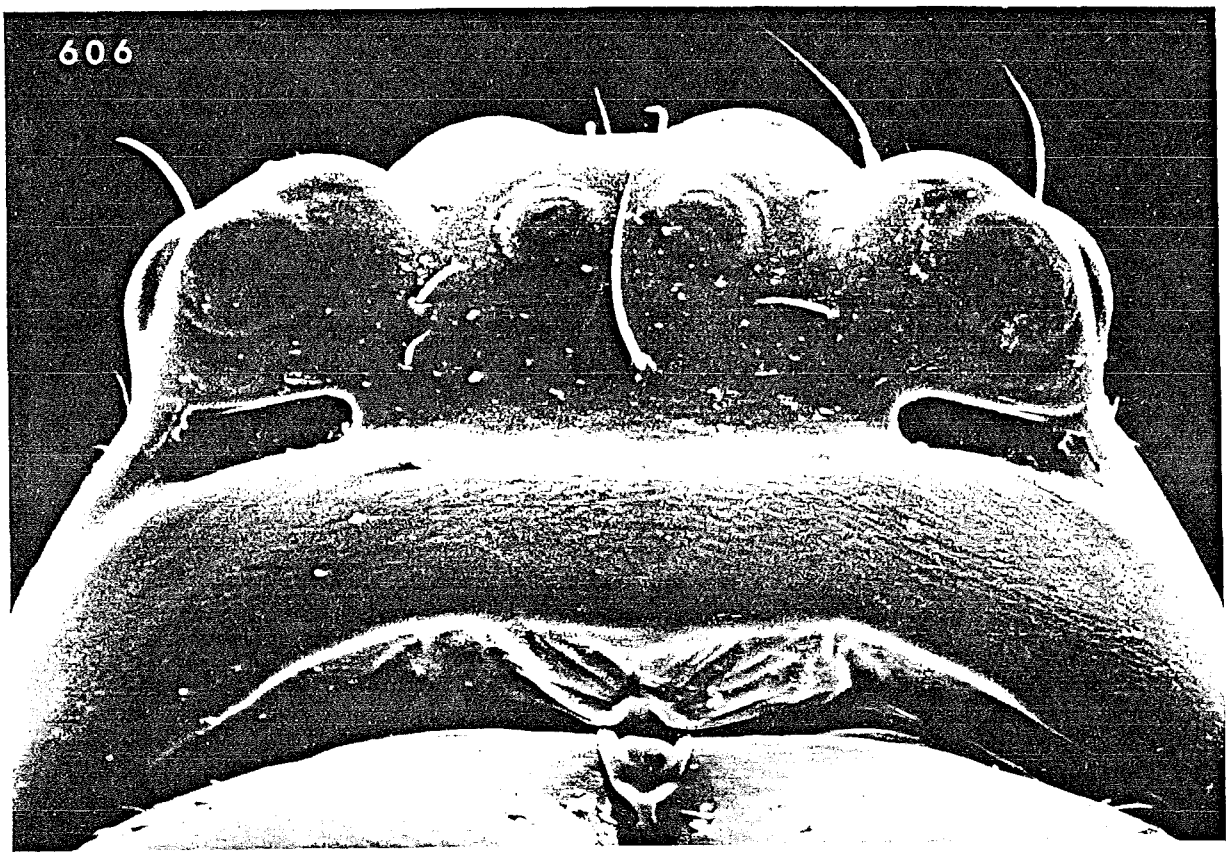
ocular sulci and cephalic elevations are only found in adult males, and the female heads are unmodified. In many species, however, post-ocular sulci are absent, but the male heads are elevated into turrets. In these, the ductules of secretory cells open onto the anterior faces of the turrets, and various structures, which include hair-patches, cornicules and clefts are so disposed as to suggest that they act as traps to retain the secretions. Few Linyphiinae possess cephalic specialisations in the males, and only in the European species of *Bolyphantes* have they been found to be accompanied by secretory cells (Blest and Taylor, 1977).

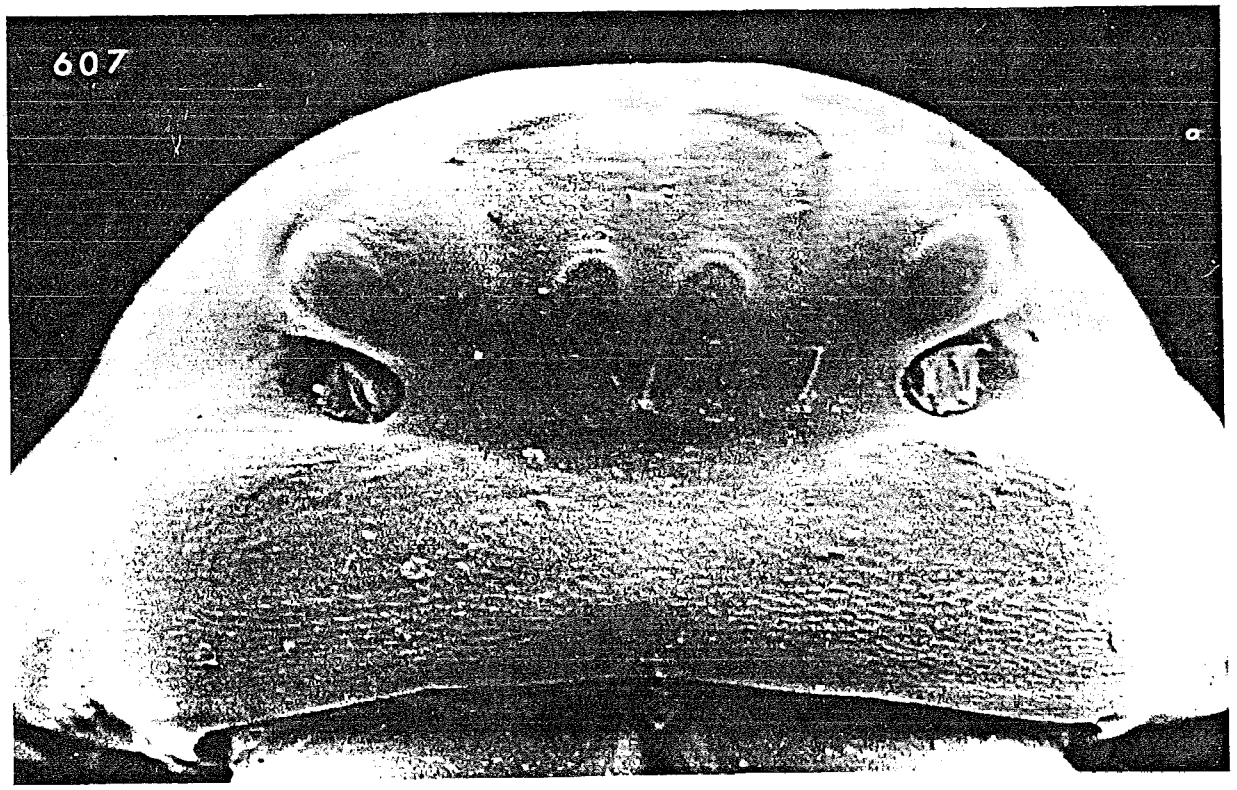
In Mynogleninae, sub-ocular sulci are present in both sexes, and also in juveniles. They take the form of shallow troughs, and are not in a position to be gripped by either sex during intromission. In the three species of *Mynoglenes* whose courtship was studied by Blest and Pomeroy (1978), the sub-ocular sulci played no role in copulation. In Erigoninae whose males possess turrets which lack post-ocular sulci, the females during copulation dribble saliva over the heads of the males, and then re-ingest the product (Schlegelmilch, personal communication), but, again, *Mynoglenes* do not do this. It does not seem likely that the mynoglenine sub-ocular sulci





Figs. 604-605 *Baryphyma* (Blackwall), a European erigonine, to show the position and external organisation of post-ocular sulci Fig. 604 whole carapace Fig 605. left post-ocular sulcus, to show the groove leading to the external orifice of the invaginated sac, and the innervated spines at the entrance. Scanning electron micrographs



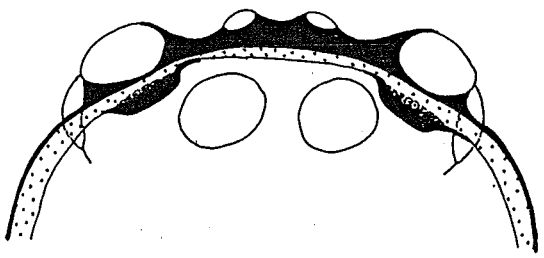


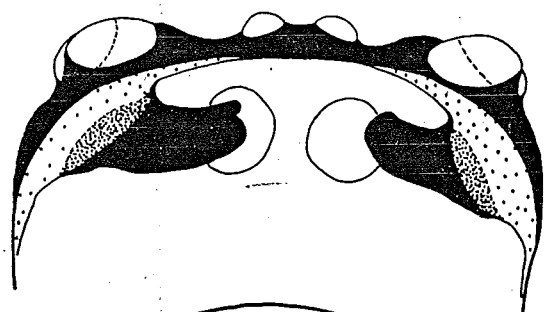
Figs. 606-607 *Protoerigone otagoa* n. sp. heads Fig. 606 female Fig. 607 male. The male sulci are filled with dried secretion. Scanning electron micrographs

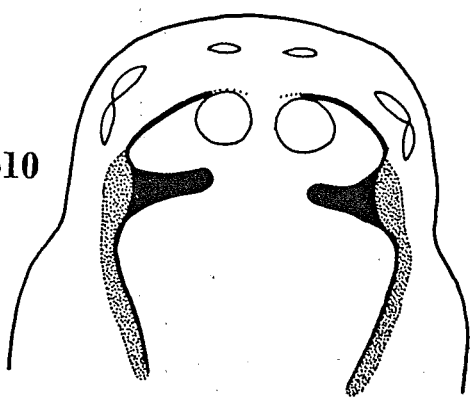
play any role in sexual behaviour, and it is more probable that the clypeal glands elaborate a defensive secretion. The unusual ultrastructure of the clypeal secretory cells is consistent with the synthesis of a toxic product (Blest and Taylor, 1977).

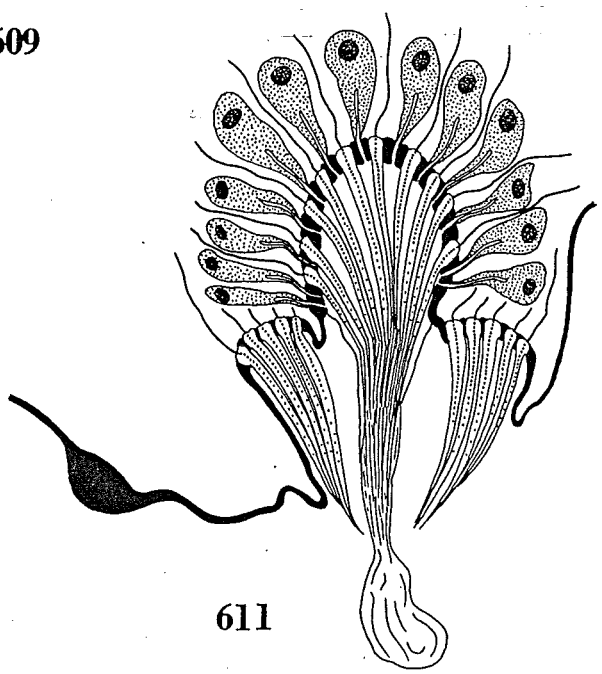
The only elaboration of mynoglenine sulci towards an erigonine condition is the modification found in the two species of *Protoerigone*. Here, the female sulcus is a typical shallow trough (Figs. 606,608). In males, however, it is directed rather more laterally (Fig. 607) and leads to a deeply invaginated sac, just as in the Erigoninae (Fig. 609). The sac is not equipped internally with spines, although it possesses secretory pores, but in both sexes the outer, posterior regions of the sulci include a few stout spines which lie within the area of the sulcal floor which is covered by secretory pores (Figs. 612,613). The dimensions of the male sacs are similar to those of erigoninae (Fig. 610), and it must be supposed that in *Protoerigone* the females grip the males' heads in the same manner during copulation. Whether the secretory cells differ in the two sexes, and whether they elaborate different products remains to be determined. The sulci of male *Protoerigone* certainly contain a secretory product: the pits are filled with secreted material (Fig. 607), and the outer region of the sulcus is perforated by pores. The deeper part of the invagination cannot be seen by scanning electron microscopy of the sulcus, and satisfactory preparations of the tips of the sacs made by maceration in KOH have not been obtained. However, pores have been seen in whole mounts of macerated sulci at the tips of the invaginations, and in similar material the internal atria of the pore can be resolved quite far in from their bases (Figs. 614,615).

A major problem in the interpretation of erigonine cephalic modifications has been the role of









Figs. 608-611 Cephalic sulci Figs. 608-609 *Protoerigone otagoa* Profiles of the sulci seen from below in preparation macerated in KOH, i.e. viewed along the cheliceral axes Fig. 608 female Fig. 609 male Fig. 610 *Baryphyma pratensis* (Blackwall) (Erigoninae) Male cephalic sulci Fig. 611 *Panamonops sulcifrons* (Wider) Diagrammatic section through cephalic pit, to show the moulding of secretion by innervated spines to form an extruded 'horn' The orifice of the pit is ringed by similar spines, and spines and secretory cells alternate within the sac in an orderly manner. The diagram is derived from reduced-silver impregnations of sections of material preserved in 70% ethanol.

the sulci; they are structures which would seem to be of little use unless they are fully developed, and no plausible route for their evolution has so far been suggested. Their condition in the Mynogleninae suggests an evolutionary pathway in which secretory function preceded a mechanical role, the latter being a secondary development. A hypothetical, linear evolutionary sequence would then be as follows:

(i) Unicellular, hypodermal glands elaborated defensive secretion.

(ii) The glands aggregated, and became associated with cuticular specialisations – depressions and hair-patches – which trapped the secretion.

(iii) The depressions were converted into sub-ocular sulci.

(iv) In some species, the sub-ocular sulci of the males allowed the fangs of the females to catch in them during the course of the aggressive and sometimes fatal bouts which characterise mynoglenine courtships (Blest and Pomeroy, 1978). Since it may be supposed that locking the females' weapons during such aggressive encounters must, inevitably, carry a considerable selective advantage, sulci which permitted engagement might be expected to evolve rapidly to the state found in *Protoerigone.*

(v) At this point the male secretion might, perhaps have remained defensive. Equally it might have changed to provide a pherormone, possibly acting either to keep the female occupied during copulation, or even actively to tranquillise her.

(vi) Selection promoting the development of a pheromone as opposed to a defensive secretion might be able to act on the male clypeal glands alone, but it is more likely that it would tend to push the glands in both sexes in the same physiological direction. In this event, the female clypeal gland would have no longer had a function, and might even have been selectively disadvantageous. In either case, it would, eventually, have been lost. In addition, it would no longer serve a useful function in juveniles, and would be lost in them, too, so that sulci would then be confined to adult males as they are in all adult male Erigoninae which possess them.

(vii) Mechanically, male sulci would be most effective the more laterally they were placed, and it could be argued that this consideration has led to their migration from a sub-ocular to a post-ocular position.

This scheme has an important implication; erigonine post-ocular sulci were not developed independently in the various genera in which they are found, but have a common origin. This, in turn, implies that the overall trend within the Erigoninae is towards their gradual loss, for there are genera in which some species possess them and others do not, (e.g. *Walckenaera* and *Diplocephalus).* There is also much to suggest that sulci or structures derived from them can migrate far from their original positions. In those *Oedothorax* which possess them they are posteriorly placed, and no longer associated with the lateral eyes, and in the European *Oedothorax gibbosus* and *Notioscopus sarcinatus* there are transverse cephalic clefts which appear to be derived from them. Males of *Panamomops* have a pair of forwardly-directed pits at the anterior corners of the carapace, above the lateral eyes; small 'horns' appear to sprout from the pits. Sections show that the pits are modified sulci, and that the 'horns' are composed of secretion moulded by the outwardly-directed spines of the sacs (Fig. 611). This lability of the erigonine sulci makes the simple scheme for their derivation given above quite plausible, but it is equally possible that post-ocular sulci were derived from shallow troughs or pits in the same position.

Erigoninae with modified heads which lack sulci nevertheless have the cephalic elevations to various degrees filled with secretory cells which empty to the anterior faces of the turrets (Blest and Taylor, 1977). It is interesting that in at least one Mynoglenine, *Poecilafroneta caudata,* secretory pores are found remote from the reduced sulcus in the clypeal region (Fig. 569).

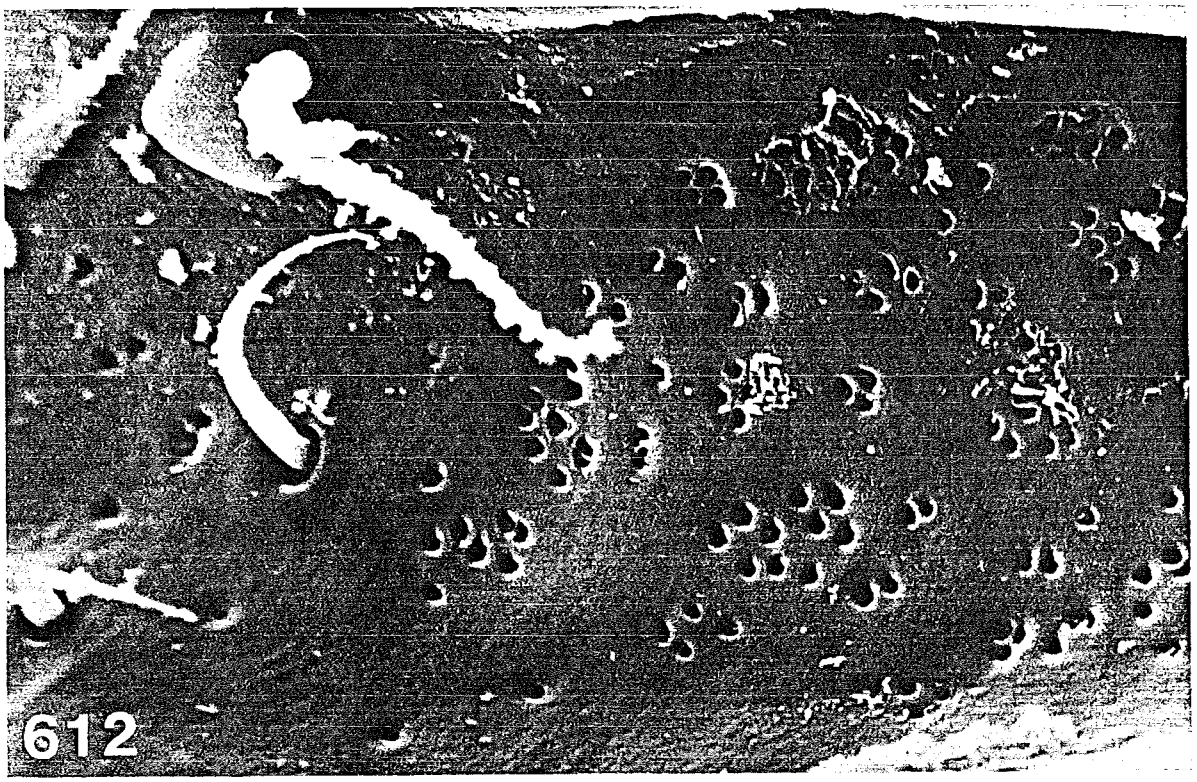
THE PHYLOGENY OF THE LINYPHIIDAE

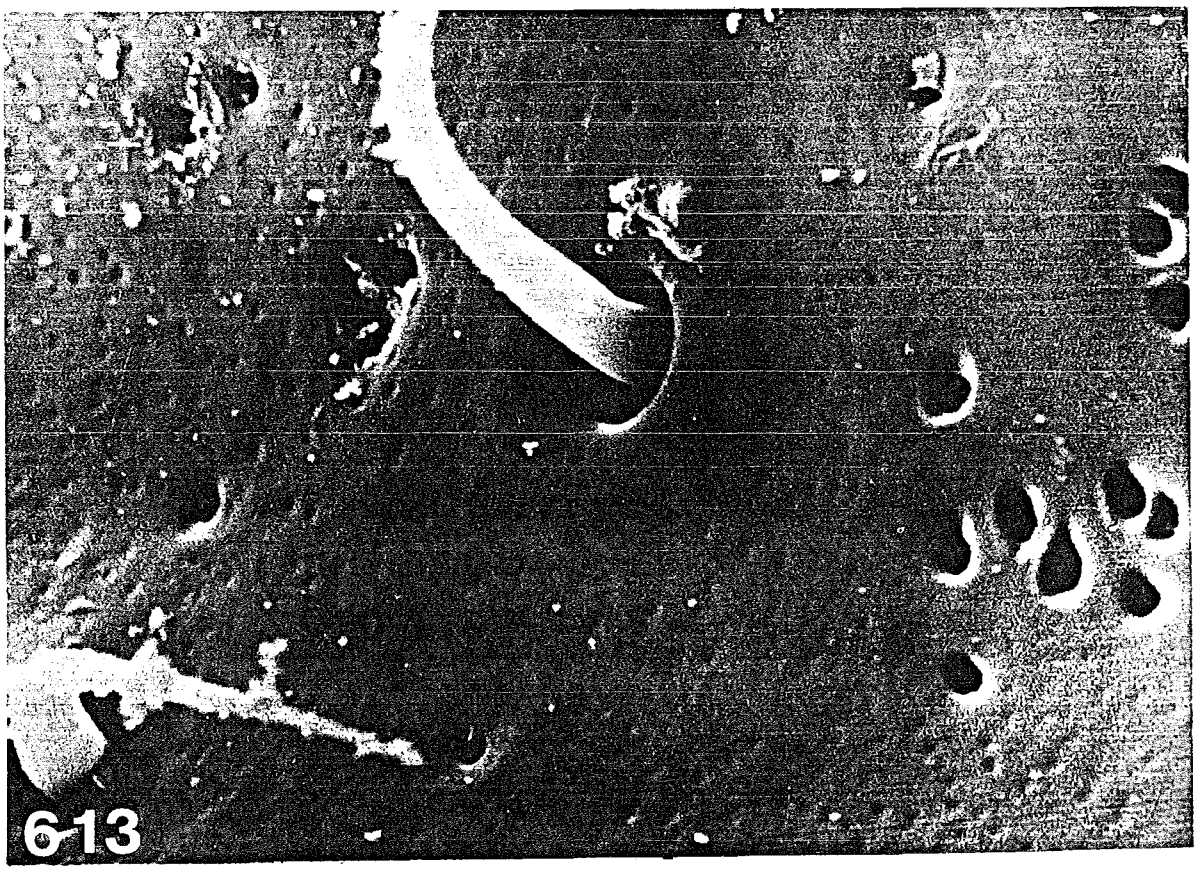
The Mynogleninae compound the principle characters of the Linyphiinae and Erigoninae (Table I), and they offer a paradox: they prove to share

TABLE I

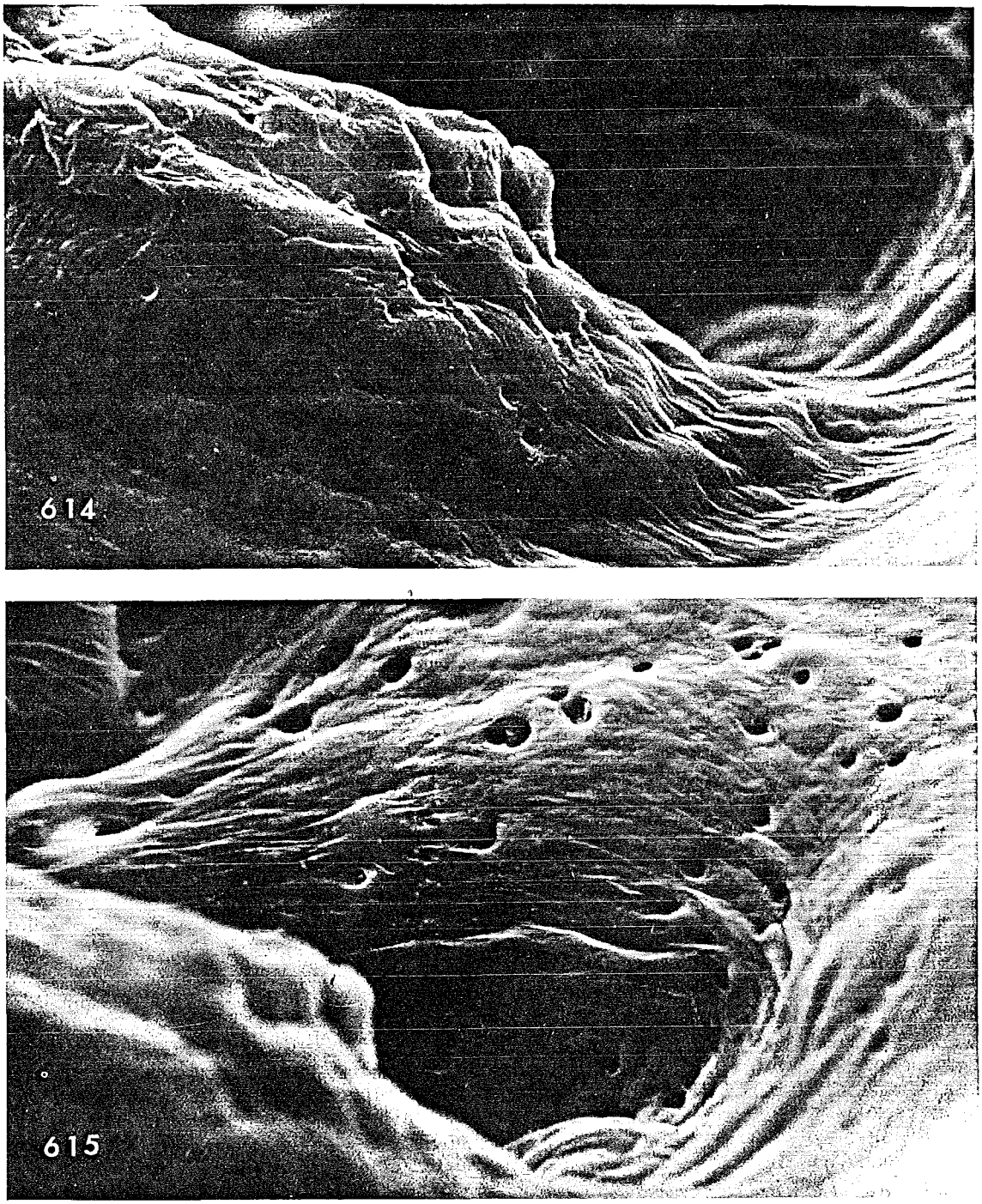
Mynogleninae: linyphiine and erigonine characters (modified from Blest and Pomeroy, 1978).

Linyphiine characters	**Erigonine characters**
Simple tracheal system confined to abdomen.	Sulci on head supplied by clypeal glands (Blest and Taylor, 1977)
Palpal tibial apophysis lacking.	Simple paracymbium
Well-developed epigynal scape, or socket shown to be derived from it.	Radix, if present, fused to or continuous with embolus.
Spines, often numerous on 4th tibia, and spines, with some exceptions, present on metatarsi.	Simple embolic division, without *lamella characteristica.*
Apical tibial and metatarsal spines usually present.	Conductor a simple development of the duct membrane.
Abdominal pattern usually with a conspicuous dorsal folium.	Sperm-web constructed from below.





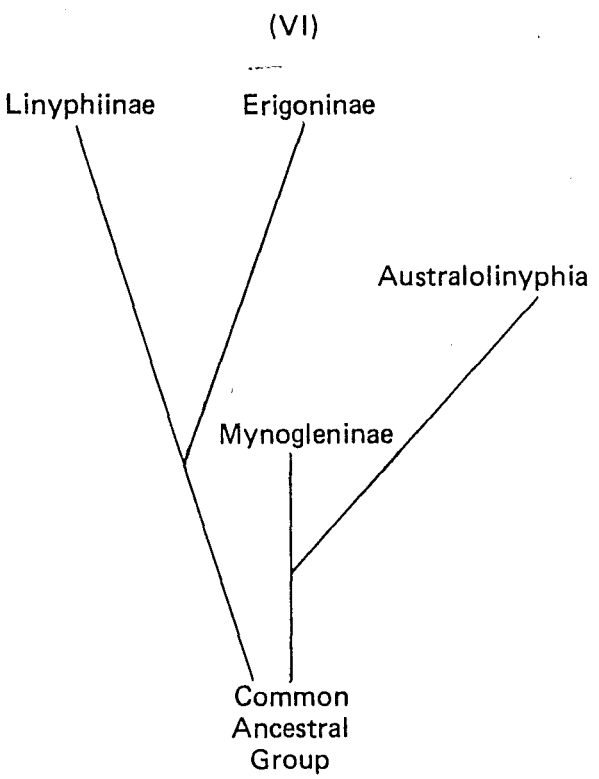
Figs. 612-613 *Protoerigone otagoa* n. sp. Floor of female sub-ocular sulcus, to show the presence of strong spines within the field of secretory pores. Scanning electron micrographs



Figs. 614-615 *Proterigone otagoa* n. sp. Internal surface of male sub-ocular sulcal sac after maceration in KOH, to show the atria of the secretory pores. In Fig. 614, the base of the sac is at the plane of focus, whereas in Fig. 615 the cuticle of the region of clypeus adjacent to the orifice of the sulcus is in focus; both show the presence of atria. Scanning electron micrographs

the greater proportion of characters with the Erigoninae, but their tracheal patterns are uniformly of the linyphiine type, and it has been shown that of all linyphiid features, tracheation is the most stable, and affords the clearest dichotomy between the two traditional subfamilies. If the view is adopted that the erigonine tracheal pattern was derived from the linyphiine system, there is no problem other than the difficult matter of why the simple abdominal tracheae of the Linyphiinae should have been extended to provide the complex system of tracheoles invading the cephalothorax which is typical of Erigoninae (Blest, 1976). Members of both subfamilies share a common *modus vivendi*, and there are no obvious differences in their mobilities or levels of activity which might

seem to account for so radical a development. The linyphiine genus *Allomengea* alone shows branching of the medial tracheae within the abdomen, and can be held to represent a first stage in the evolution of the erigonine system, although in this case it is clearly an independent development, and the complex palps of *Allomengea* preclude them from representing intermediates between the two subfamilies. In all three subfamilies the trichobothria have the bothria of the same form (Figs. 27-29). Wiehle (1956, 1960) placed a number of genera *(Donacochara, Leptorhoptrum, Hilaira, Drepanotylus, Phaulothrix* and *Hylyphantes)* in a separate group, the Donacochareae. Merrett (1963) found that their palps revealed this to be a heterogeneous assembly, and concluded that the grouping was an artificial one. Although these genera possess erigonine tracheal distributions, the first four listed are distinct in that the prosomae are invaded not by tracheoles, but by similar bundles of tracheae with well-marked taenidia. This feature may preserve an early stage in the evolution of the erigonine system. Holm (1968) suggested that *Afroneta*, now placed in the Mynogleninae, is most closely related to the Donacochareae, and on the assumption that linyphiine tracheal systems were converted to erigonine systems in the course of evolution, this is a quite plausible interpretation, provided that too much weight is not given to the palpal anomalies. Nevertheless, it cannot be argued that the Erigoninae and Linyphiinae were evolved linearly from the Mynogleninae for at least one reason: all Mynogleninae have lost the claw on the female palp, whereas although it is absent in Erigoninae, it is present in the Linyphiidae; once lost, such a structure cannot be regained, and only the Erigoninae could be derived directly from the Mynogleninae. Although, obviously the Mynogleninae could have evolved in this way, there is little real radiation within them other than of rather trivial characters and such a proposal does not seem very plausible. More reasonably, it may be suggested that the Mynogleninae are a relict group lying somewhere near the common ancestry of both of the other two subfamilies, but that they are not directly ancestral to them. Possibly, *Australolinyphia* represents an isolated and bizarre elaboration from the Mynogleninae, although for the reasons noted above it is impossible to make a decision about its position on the present evidence. The summary diagram below gives the best hypothetical phylogeny which can be achieved, and can only be regarded as tentative. Unavoidably, it begs the question as to whether the accessory processes in the embolic divisions of Linyphiinae were present in the ancestral group, and were lost in the Erigoninae and Mynogleninae, or whether they were a separate and later development private to the lineage of the one subfamily.



A radically different scheme has been proposed by Millidge (1977), derived from the overall conformations of the male palpal organs. He argues that conformational analysis does not support the division of the European Linyphiidae into two subfamilies and suggests a tentative phylogenetic classification of the family which regards the erigonine tracheal pattern as the primitive form, and supposes that linyphiine species have been evolved polyphyletically at the ends of a number of different lineages. Although the evidence from palpal conformation is attractive, Millidge's scheme poses a number of difficulties. In particular, why are the linyphiine tracheal systems so uniform in their arrangement, as if they have been achieved in each phylogenetic line by a single kind of 'quantal' transition? Millidge's scheme also requires the independent evolution of vulval scapes in more than one lineage, linked not only to the simple tracheal pattern, but also to retention of the female palpal claw, for once this latter character has been lost in typical erigoninae it could hardly be regained. The absence of female palpal claws in Mynogleninae means they cannot be regarded as directly ancestral to Linyphiinae, yet the subfamily suggests that strong scapes may be a primitive character within the family as a whole. It is unfortunate that the significance of the two types of tracheal system within the Linyphiidae is obscured by our current ignorance of the respiratory physiology of spiders, and that the sexual ethology of the family is known for so few species. At present, the comparative merits of Millidge's proposal, and the alternative interpretation tentatively suggested here can hardly be assessed.

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